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NETWORK

COORDINATOR

Prof. dr. ir. Joep Crompvoets (KU Leuven – Public Governance Institute)

PARTNERS

- Prof. dr. Geert Bouckaert – Prof. dr. Bruno Broucker – Prof. dr. Ir. Joep Crompvoets (KU Leuven – Public Governance Institute)
- Prof. dr. Monique Snoeck (KU Leuven – Research Centre for Management Informatics)
- Prof. dr. Naji Habra – Dr. Benoit Vanderose (UNamur – Research Centre on Information Systems Engineering)
- Prof. dr. Cécile De Terwangne (UNamur – Research Centre on Information, Law, and Society)
- Ir. Ingrid Vanden Berghe – Jan De Waele (National Geographic Institute of Belgium)

AUTHORS

1. Prof. dr. ir. Joep Crompvoets (KU Leuven – Public Governance Institute)
2. Prof. dr. Monique Snoeck (KU Leuven – Research Centre for Management Informatics)
3. Prof. dr. Naji Habra – Dr. Benoit Vanderose (UNamur – Research Centre on Information Systems Engineering)
4. Prof. dr. Cécile De Terwangne (UNamur – Research Centre on Information, Law, and Society)
5. Maxim Chantillon (KU Leuven – Public Governance Institute)
6. Rink Kruk (National Geographic Institute of Belgium)
7. Anthony Simonofski (KU Leuven – Research Centre for Management Informatics)

8. Thomas Tombal (UNamur – Research Centre on Information, Law and Society)

PROJECT WEBSITE: WWW.FLEXPUB.BE

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EXECUTIVE SUMMARY

FLEXPUB aims to contribute to the development of a federal strategy for enabling flexibility, adaptability and innovation in the public sector with a focus on a next generation of geospatial electronic services (e-services). It is expected that the public e-services will continuously change as citizens have higher expectations towards them and technological developments provide new possibilities. During the last two decades, the Belgian federal government and administration have taken significant steps to satisfy (tomorrow's) stakeholders, i.e. citizens, businesses and public organisations.

In order to fully understand the current 'as-is' situation and the 'day-to-day' challenges that the stakeholders face, the starting point of the FLEXPUB project is the Work Package 2 "Baseline measurement" (hereafter WP2). WP2 aims to understand the current state-of-play concerning spatial data and e-services in the period 2016-2017. The data is gathered and structured via the COBIT enablers, and via the daily challenges identified for each of these enablers.

The focus of WP2 lies on understanding the current Belgian situation. This will in turn allow the research team to identify, in Work Package 3 – "Requirements", the needs and challenges that the administrations have in order to be able to offer more flexible and innovative e-services, as well as the barriers that they face in doing so. At a later stage, the research team will suggest, in Work Package 4 – "Enablers", solutions to fulfil those needs and overcome those barriers.

In this WP2, the changing demands of stakeholders to future public service delivery are studied. In this way, WP2 contributes to answer to the first sub-objective of the FLEXPUB project: Provide an overview of the status of the management of geospatial e-services at the federal government, and value key processes (projects) dealing with this type of services. In particular WP2 aims to understand what the main geospatial e-services of the federal administration are. Furthermore, the key geospatial data sets are identified, with a focus on the relations between the different stakeholders involved in the exchange and production of those data sets. Also the key motivations for developing and using e-services are analysed and detected, as well as the relevant policies and regulations within the field of geospatial data and e-services.

This report first fully describes the methodology of the different research activities (General Questionnaire and Interviews) and then presents the results of the research activities, i.e. the measurements and analysis. The results are structured according to the different COBIT enablers, namely "Processes", "Oorganisational structures", "Service infrastructure & applications", "People, skills & competencies", "Culture, ethics & behaviour", "Information" and "Principles, policies & frameworks". For reasons explained below, the authors decided to add two extra categories, namely "General considerations", "Semantics", and to transform "Information" into the more specific "Location-based data". After this analysis and conclusion, the next steps are outlined that will be used to move from WP2 to WP3, in particular the Focus groups and the International practice comparison.

The report is concluded with Annexes that provide an overview of the General Questionnaire that was used to collect the information (in Dutch and French); a list of the e-services which were most often refered to by the General Questionnaire respondents; and the emails used to invite the respondents for the survey. In this way, the researchers aim to provide a complete overview of the research methodology used and the results obtained in this Work Package 2.

The team would like to underline that the aim of this Work Package 2 was to focus on the current situation, and especially the challenges that currently exist for the development of today's and tomorrow's e-services. It is clear from the research that various step have been taken in the direction of future e-services, but it was the intention of the researchers to focus on the elements which might constitute a challenge to obtain positive results in the development of future e-services.

1. METHODOLOGY

The goal of WP 2 was to achieve a baseline measurement of the current e-service situation in Belgium. In order to do so soundly, it was chosen to conduct a survey (hereafter the "General Questionnaire"), which allowed the collection of research data from a wide array of organisations, and to complement this with 35 in-depth interviews with the key stakeholders. The interviews were especially useful as they allowed us to understand why certain choices regarding the geospatial e-services and data had been made. These in-depth interviews were also the vector through which the administrations' daily challenges were identified. This kind of qualitative research helps to get a better grasp of the current as-is situation (Maxwell, 1996).

GENERAL QUESTIONNAIRE

The General Questionnaire targeted the federal administrations, the regional administrations, the provincial administrations, the local communities and the private sector. This questionnaire was also sent to the members of the Follow-up Committee. It contained a total of 40 questions, but none of the respondents had to answer all 40 of these questions, given that some of the questions would only be asked if the respondents had answered in a certain way to a previous question. The questions were defined on the basis of the existing literature as well as survey research conducted earlier on geospatial data and services. Furthermore, the COBIT enablers served as a guiding principle. It was ensured that all different enablers were present in the questionnaire.

The questionnaire addressed a broad range of topics, namely:

- the use of public e-services;
- the development of public e-services;
- the process of requirements' identification for e-services;
- the user involvement in the design of these e-services;
- the processing of location-based data;
- the identification of relevant datasets;
- the financial arrangements for data exchange.

Respondents for the survey were selected on the basis of their role within their organisation, guided by the highest in hierarchy of each organisation. There had to be a clear link to geospatial data and/or e-services in the role description of the person. The online questionnaire was launched on the 8th and 9th of December 2016. To do so, an email was sent to the selected respondents, which contained a brief explanation of the project and the reasons why it was important for them to fill in the questionnaire. The French and Dutch versions of these emails can be found in the Annexes (Annexes 3 and 4). Each of these emails contained a personalised link to the questionnaire, which allowed the team to determine which of the respondents had answered to the questionnaire.

The questionnaire was sent to a total of 728 respondents, divided as follows:

- Follow-up Committee: 40 respondents
- Federal administrations: 193 respondents
- Regional administrations: 288 respondents
- Provincial administration: 112 respondents
- Private sector: 91 respondents
- Private-Public partnership: 4 respondents

Furthermore, the local level was also targeted. At first, it had been decided to make a selection of the local level respondents based on the number of citizens living in the local entity (communes/gemeenten – villes/steden). All the capitals of the provinces and the city of Brussels were selected. On top of this, two local entities among the most populated entities per province (excluding Brussels) were selected. This action was repeated for the least populated entities per province (excluding Brussels). In Brussels, 5 extra local entities were selected, additionally to the city of Brussels. Accordingly, a total of 56 local entities were selected. However, the average

response rate appeared to be very low during the response period, and, therefore, it was decided to send the questionnaire to all local entities in Belgium. Although this was likely to have a negative effect on the total response rate, it offered a better overview of the geospatial e-service situation among the local entities in Belgium. Therefore, the questionnaire was sent to all 589 local entities. As a result, the survey was send to a total of 1317 respondents.

In order to increase the response rate, three reminders were sent (original invitation: 8th/9th December 2016 – first reminder: 10th January 2017 – second reminder: 26th January 2017 – third reminder: 1st February 2017). All respondents that did not reply to the questionnaire received the first and second reminder. The third reminder was only sent to those that started the questionnaire but did not fully complete it. Finally, the institutions of the federal level with a crucial impact on the development of (geospatial) e-services, which had not replied after the third reminder, were contacted by telephone between the 15th and the 17th February. During these phone calls, the value of the questionnaire and the importance of their contribution was explained. The questionnaire was closed on the 2nd March 2017.

IVOX, a well-respected and leading market research and polling agency located in Leuven, with consumer research as its primary focus, gave technical support to the research team for the programming of the French and Dutch online questionnaires. They also provided a clear dataset containing the questionnaire results of all the respondents.

As a result of the above actions, 201 out of the 1317 recipients replied to the questionnaire (15.2% - this percentage goes up to 23.5% if the local communities are excluded from the statistics).

Table 1.1: General Questionnaire Response Statistics

Target group	N	Number of respondents	Response rate %
Follow-up Committee	40	23	57,5 %
Federal administrations	193	51	26,4 %
Regional administrations	288	62	21,5 %
Provincial administrations	112	18	16,1 %
Private sector	91	16	17,6 %
Private-Public partnerships	4	1	25,0 %
Sub Total	**728**	**171**	**23,5 %**
Local level administrations	589	30	0,16 %
Total	**1317**	**201**	**15,2 %**

Source: FLEXPUB (2017)

The data was analysed via the IBM program SPSS Version 24. This allowed the researchers to undertake the necessary analysis steps and to get the maximum out of the data. For each question, the descriptive statistics have been calculated, and where applicable also correlations have been tested as well as possible relations between different factors. The researchers decided however to analyse the results of two questions in a manual way, without making use of IBM SPSS Version 24. The data of those two questions, Question 2 and Question 21, indeed require an interpretation and therefore prevents the use of a computer program that is not capable of making human interpretations.

INTERVIEWS

In addition to the questionnaire, the reseachers conducted 35 in-depth interviews of supposed key players in eGovernment in relation to Belgium, in order to get a profound insight in the state of play of eGovernment development. The interviews were performed in a semi-structured manner following literature's best practices and can be situated in between the "interview guide approach" and the "standardized open-ended interview". These best practices were identified in scientific sources such as Drever (1995), Maxwell (1996), Mortelmans (2009) and Patton (2015).

The topics of the interview questions were determined in advance, so that the researchers could guarantee that all the respondents would be questioned about a number of selected topics. Applying this methodology allows however a certain openeness. Indeed, although the topics are predefined, it was still possible for the researchers to ask other questions when the respondent would give unexpected relevant information. In this way, new ideas could be explored and the researchers were able to discover other relevant themes. Afterwards, the researchers coded the data by making use of the COBIT enablers. Each interview was analysed via the COBIT enablers by each researcher. After this exercise, the researchers brought together their individual coding results and created one data file in which all the interview data was structured according to the COBIT enablers. More information about this technique can be found in, among others, Gorden & Raymond (1992) or Billiet (2012).

Table 1.2 includes an overview of all the interviewed stakeholders, presented in chronological order of the meetings. 25 out of the 35 respondents are also member of the Follow-up Committee. In some cases, it was also decided to conduct more than one interview. An example is FEDICT, where the first respondents informed the researchers that it was also relevant to interview another civil servant working for FEDICT. Also within the European Commission, DG CONNECT, it was decided to conduct more than one interview due to both the various policy implementation methods used, and the broad variety of topics that DG CONNECT deals with. Finally, it was decided to focus on all levels of government, as well as the private sector. Citizens were left out of the interviews, as this is a target group that is very broad and therefore difficult to approach via in-depth interviews.

Table 1.2: List of conducted interviews

	Type of organisation	Level	Organisation	Member of Follow-up Committee	Date
1	Administration	Federal	FPS Information and Communication Technology (FEDICT) – Actor 1	Yes	04/08/2016
2	Administration	Federal	State Archives of Belgium	Yes	17/08/2016
3	Administration	Local	Flemish Organisation of Local Cities and Municipalities (VVSG)	Yes	18/08/2016
4	Administration	Federal	FPS Information and Communication Technology (FEDICT) – Actor 2	Yes	24/08/2016
5	Private sector	/	AGORIA Geo-ICT – Actor 1	Yes	25/08/2016
6	Private sector	/	Proximus	Yes	25/08/2016
7	Administration	Federal	FPS Economy, SMEs, Self-employed and Energy – Statistics Belgium	Yes	26/08/2016
8	Administration	Local	Union of Villages and Cities of Wallonia (UVCW)	Yes	20/09/2016
9	NGO	European	EUROCITIES	No	07/10/2016
10	Administration	Federal	Federal Police	Yes	12/10/2016
11	Administration	Federal	FPS Finance – General Administration of the Patrimonial Documentation	Yes	14/10/2016

12	Administration	Local	Intermunicipal Company for Informational and Organisational Mutualisation (iMio)	Yes	20/10/2016
13	Administration	Federal	State Archives of Belgium	Yes	24/10/2016
14	Administration	Federal	Privacy Commission	No	27/10/2016
15	Administration	Federal	Ministry of Defence	Yes	27/10/2016
16	Administration	Regional	e-Wallonia-Brussels Simplification (eWBS)	No	13/12/2016
17	Administration	Local	Municipalities of Saint-Gilles and Brussels	No	17/01/2017
18	Administration	Federal	Service for Administrative Simplification	No	25/01/2017
19	Administration	Regional	Agency Information Flanders	Yes	30/01/2017
20	Public sector	Federal	INFRABEL	Yes	13/02/2017
21	Public sector	Federal	ASTRID nv	Yes	02/03/2017
22	Administration	European	European Commission – DG CONNECT - Actor 1	Yes	08/03/2017
23	Private sector	/	SMALS and RSZ	No	30/03/2017
24	Administration	Federal	Royal Meteorological Institute (IRM/KMI)	Yes	10/04/2017
25	Private sector	/	SMALS	No	11/04/2017
26	Administration	Federal	FPS Finance and Social Integration	Yes	13/04/2017
27	Administration	European	European Commission – DG CONNECT - Actor 2	No	24/04/2017
28	Administration	Federal	Belgian Civil Aviation Authority and FPS Mobility & Transports	Yes	24/04/2017
29	Administration	Federal	Belgian Royal Observatory	Yes	27/04/2017
30	Administration	Regional	Public Service of Wallonia – DGO6 Economy, Employment and Research	No	02/05/2017
31	Private sector	/	AGORIA Geo-ICT – Actor 2	Yes	09/05/2017
32	Administration	Federal	FPS Internal Affairs – Emergency and Crisis Management	Yes	10/05/2017
33	Administration	European	European Commission – DG CONNECT – Actor 3	No	10/05/2017
34	Administration	Regional	Brussels Regional Informatics Centre	Yes	11/05/2017
35	Private sector	Federal	BPOST	Yes	17/05/2017

Source: FLEXPUB (2017)

2. RESULTS OF THE GENERAL QUESTIONNAIRE AND THE INTERVIEWS

The results are structured on the basis of the enablers of the "COBIT 5 framework", which are the guiding principles within the whole research project. These enablers are the following (ISACA, 2012, p. 27):

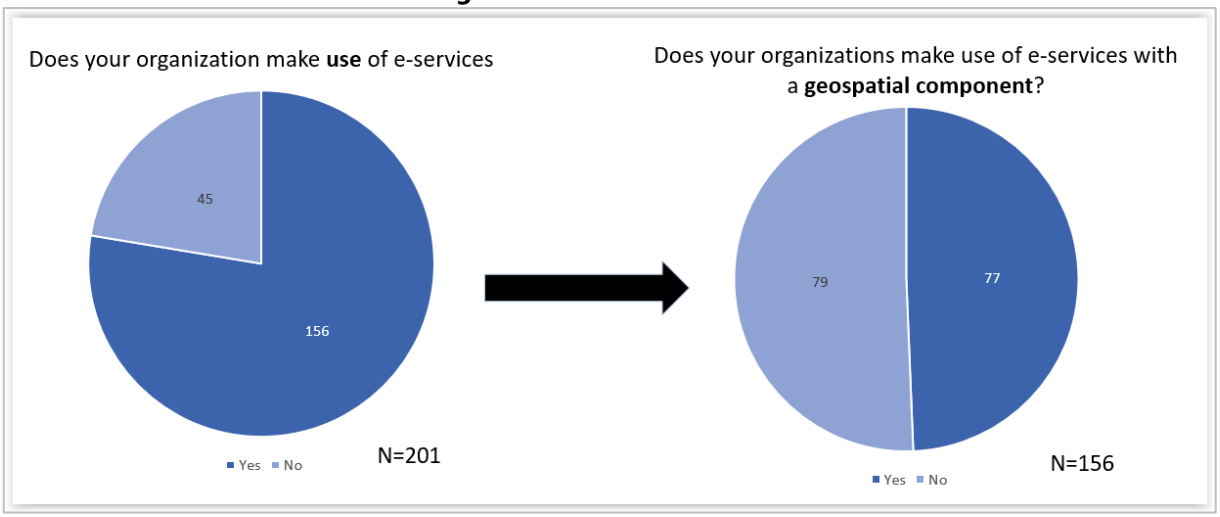
- **Processes** *"describe an organized set of practices and activities to achieve certain objectives and produce a set of outputs in support of achieving overall (IT-related) goals"*.
- **Organisational structures** *"are the key decision-making entities in an enterprise"*.
- **Service infrastructure and applications** *"include the infrastructure, technology and applications that provide the enterprise with information technology processing and services"*.
- **People, skills and competencies** *"are linked to people and are required for successful completion of all activities and for making correct decisions and taking corrective actions"*.
- **Culture, ethics and behaviour** *"of individuals and of the enterprise are very often underestimated as a success factor in governance and management activities"*.
- **Principles, policies and frameworks** *"are the vehicle to translate the desired behaviour into practical guidance for day-to-day management"*.
- A final enabler defined by the COBIT 5 framework is "**Information**" and can be described as follows: *"[It] is pervasive throughout any organisation and includes all information produced and used by the enterprise. Information in required for keeping the organisation running and well governed, but at the operational level, information is very often the key product of the enterprise itself"*. The researchers decided however to specify this enabler. Instead of keeping the name "Information", it has been decided to refine it to "**Location-based data**", as the focus of the research project lies on e-services, which require data and specifically geospatial data or location-based data.

Two extra categories ("**General considerations**" and "**Semantics**") were added to address respectively the information that could not be related to a specific category, and to analyse the data that is linked to the different definitions that are used in the field for the concepts "**Location-base data**" and "**e-Services**".

GENERAL CONSIDERATIONS

First and foremost, some general considerations extracted from the questionnaire must be outlined.

Figure 2.1: Use of e-services

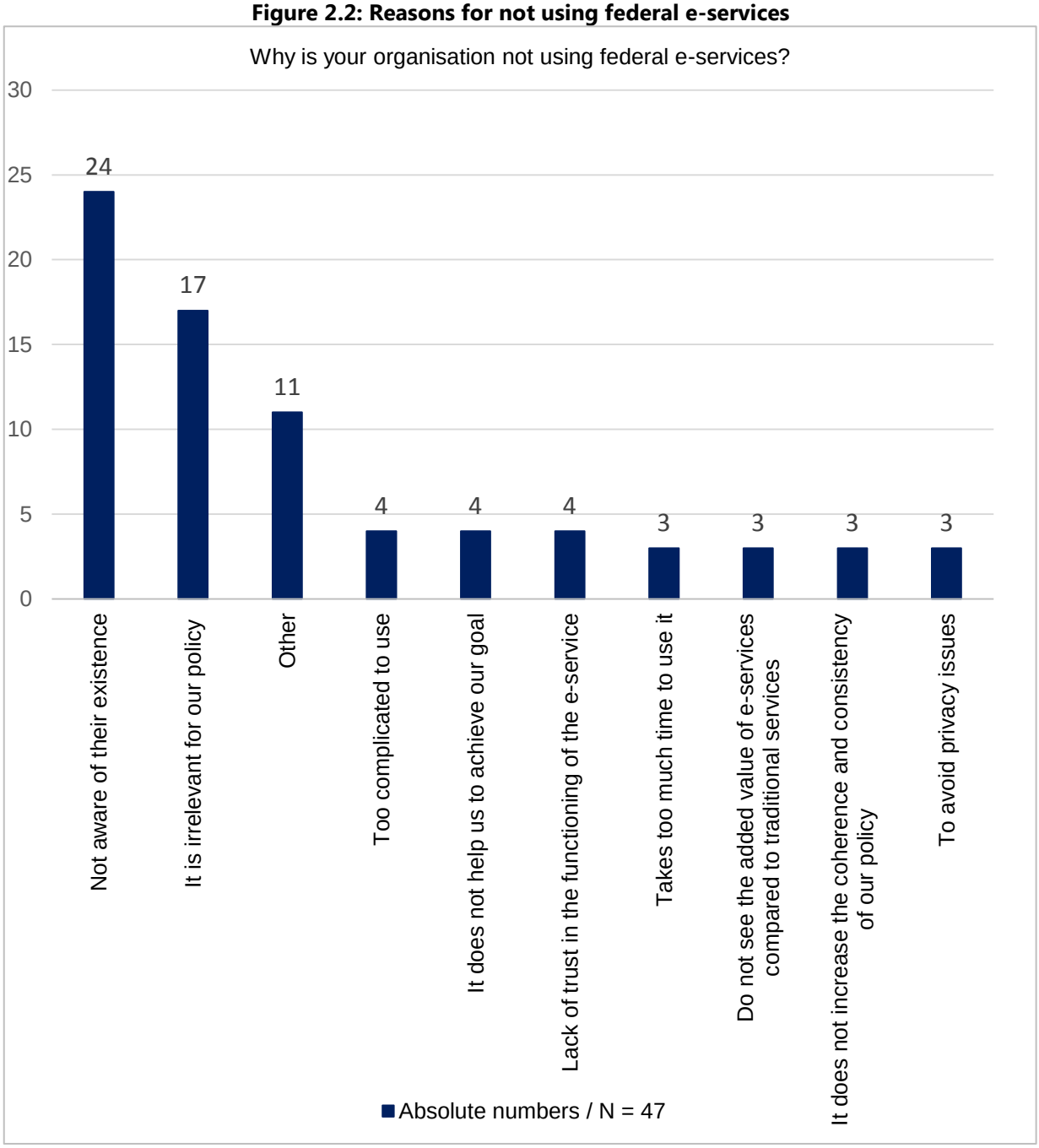


Source: FLEXPUB (2017)

Respondents were asked if they use e-services. If so, they were asked if those e-services involved a geospatial component. Regarding the use of public e-services, 156 out of 201 respondents stated that they use public e-services, as can be seen in Figure 2.1. Out of these 156 users, only half of them stated that they use e-services

that rely on location-based data. This learns the researchers that there is a gap between the use of geospatial data in e-services and the use of geospatial data in government data and policies. In government data and policies there is in around 80% of the cases geospatial data present, but this number is much lower when looking at geospatial data that is used in e-services: Only 38,3% of the respondents indicated that they make use of e-services with a geospatial component. Therefore it can be argued that there is room from improvement of existing e-services that could benefit from the use of geospatial data. Looking at differences between the levels, it becomes clear that around the same percentage of the respondents is making use of e-services at the federal (48/64 – 75%), regional (50/66 – 75%) and provincial (13/18 – 72%) level. The local level has an even higher rate: 26 out of the 31 respondents indicated that they use e-services (83%), and also the private sector has a high level with 16 out of 18 respondents using e-services (89%).[1]

Figure 2.2: Reasons for not using federal e-services

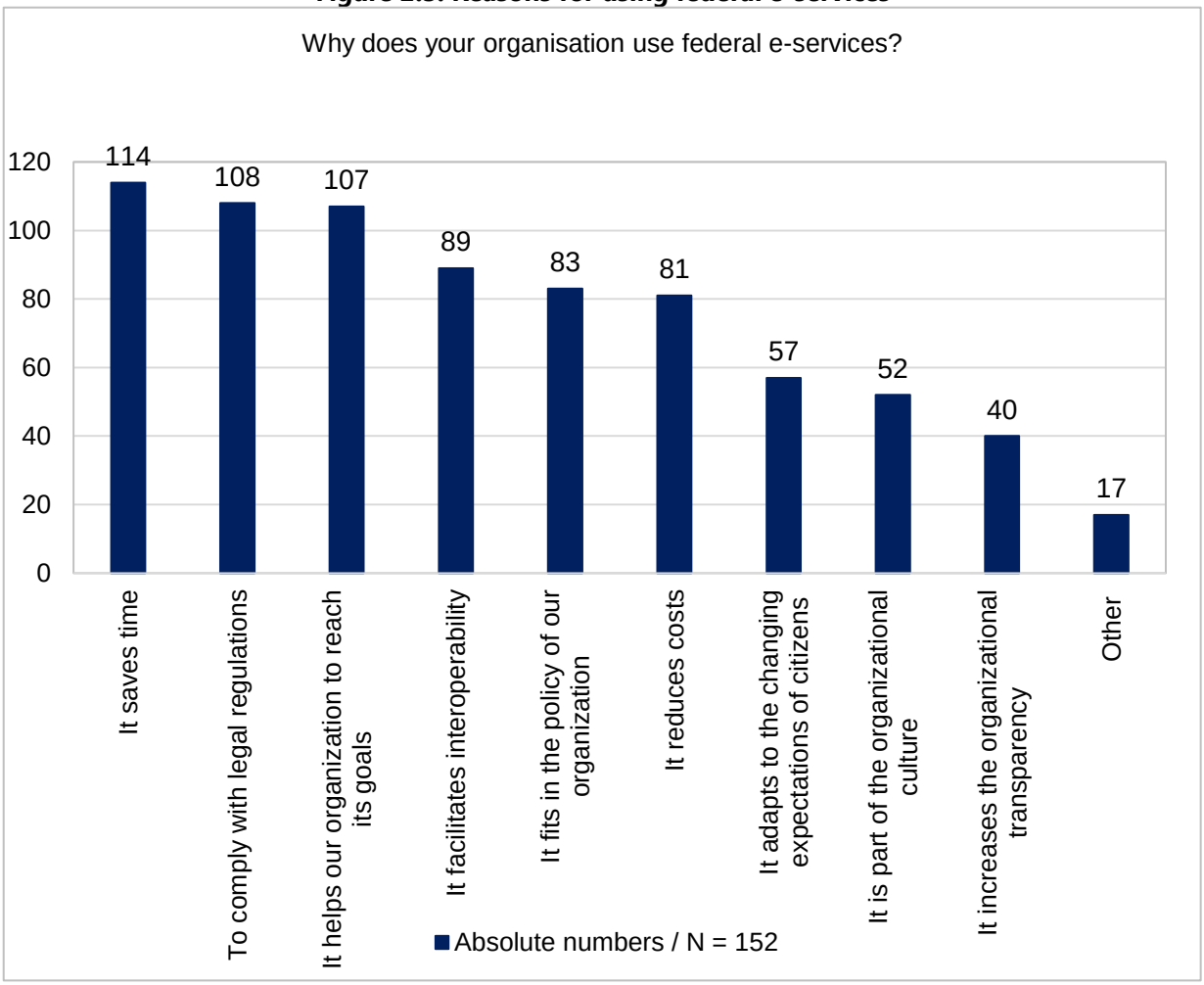


Source: FLEXPUB (2017)

[1] Please note that the absolute number of respondents for the local level, the private sector and the provincial level is low. The number for the public-private sector is too low to make any statements.

While it is important to be aware of the usage of e-services, it might be even more important to understand why e-services are used or not. In this research, the attention went to e-services offered by the federal administration. As can be seen in Figure 2.2, the main reason why respondents do not use e-services is that they are often not aware of their existence, which means that either the service does not exist at all or that users are unaware of its existance. Therefore, a better effort on the publicity and communication about these (potential) services could be done. Another reason that appears more frequently than the others is the fact that e-services are irrelevant for the policy of the organisation for which the respondent is working. It is however remarkable that other reasons, which are cited in the literature, are only indicated by a few respondents as one of the possible reasons why the organisation is not using federal e-services. Looking at the specific results for each governmental level teaches us that, due to the low response rate for this question, the only statement that can be made for the regional level is that 25 of 61 regional respondents (40%) answered to the question. The results show that 13 out of the 25 respondents (52%) are not using federal e-services because they are not aware of their existence, and 9 out of 25 respondents (36%) do not use them because the e-services are irrelevant for their policy.

Figure 2.3: Reasons for using federal e-services

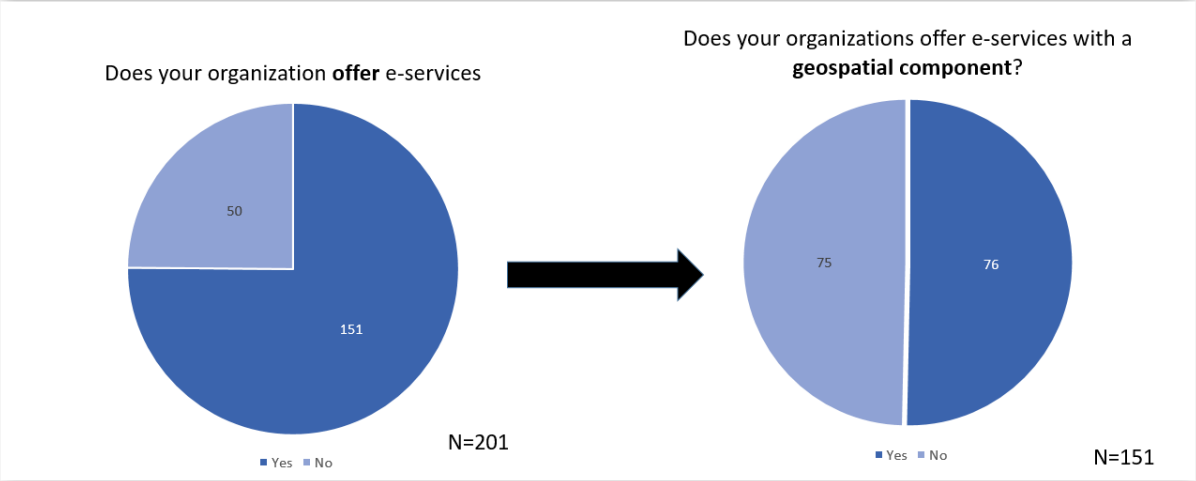


Source: FLEXPUB (2017)

Figure 2.3, in contrast, describes why the respondents do use federal e-services. A total number of 152 respondents replied to this question, and the most often cited reason to use e-services is because it saves time (75%). Also, the reasons "to comply with legal regulations" and "it helps our organisation to reach it goals" are often – respectively 108 and 107 times (70%) – ticked by the respondents. However, it is remarkable, considering the rapidly evolving private e-services, that only around a third of the respondents (57 out of 152) indicated that there they are using e-services because it adapts to the changing expectations of citizens. Looking at the

correlations between the different categories of why organisations are making use of federal e-services indicates that there is a weak but significant correlation between cost reduction and time-saving (0,515). However, it should be underlined that setting up e-services is costly and time consuming. In later phases, it could indeed be regarded as a measure to reduce costs and to gain more time. A number of other significant correlations could be found, but those were all below the 0,500 threshold. The response option "it increased the transparency of the organisation" is correlated, although always weakly (between 0,176 and 0,374) but with a significance rate between 0,05 and 0,01, to all other available answer options (except for the option "Other"). More remarkable than this however is the fact that the response option on increasing transparency is only ticked by 40 out of the 152 respondents, and ends therefore only on the ninth place, after all other response options.

Figure 2.4: Offering of e-services



Source: FLEXPUB (2017)

Besides the researchers aim to get a better understanding of the use of e-services, it was equally important to understand to what extent e-services are offered in the Belgian federal context and what the main motivations are to do so. The respondents were simply asked if their organisation offers e-services. The results are presented in Figure 2.4. If they offer e-services, a second question followed with a focus on the geospatial component in the e-service they develop – in the same way as the researchers asked for the use of e-services. Regarding the development of public e-services, 151 out of 201 respondents (75%) stated that their organisation offers public e-services. Once again, out of these 151 providers, only half build them with the input of location-based data. So, only 37,8% of the respondents indicated that they offer e-services with a geospatial component. This result is very similar to the "use" of e-services.

As indicted above, a large majority of the administrations either use and/or produce e-services. This is apparent from the fact that, when asked what e-services are used or produced by their administration, no less than 385 different e-services were mentioned by the respondents. This tends to support the finding that, even though administrations are well aware of the importance of developing e-services, most of these administrations develop those e-services independently, without necessary seeking to cooperate with other administrations. Accordingly, a wide number of e-services are developed by a single administration for its own needs, and are not (or only partially) used or re-used by other administrations.

However, it is worth noting that, contrary to what has been said in the above paragraph, the researchers were able to detect a number of e-services that are used by at least three administrations.[2] Those are listed in Table 2.1.

[2] The names of the administrations included in the below tables are not translated to English but are kept in the original language (Dutch or French) that was used by the respondents to reply to the questionnaire. A complete overview of these e-services, the organisations that offer it and the organisations that use it can be found in Annex 5.

Table 2.1: e-Services used by at least three administrations[3]

	e-Service	More information
1	e-Procurement	https://enot.publicprocurement.be/changeLanguage.do?language=en-GB
2	Crescendo	https://fedweb.belgium.be/fr/evaluation/cycle_evaluation_membres_personnel/steun_aan_de_implementatie_van_de_evaluatiecycli/crescendo
3	Kruispuntbank van Ondernemingen / Banque-Carrefour des Entreprises	http://economie.fgov.be/fr/entreprises/BCE/#.Wbkc58YsClJ
4	CSAM	https://www.csam.be/en/index.html
5	Federal Authentication Service	http://www.fedict.belgium.be/en/identificatie_beveiliging/federal_authentication_service
6	Registre national / Rijksregister	http://www.ibz.rrn.fgov.be/fr/registre-national/
7	Portaal Sociale Zekerheid / Portail de la Sécurité Social	https://www.socialsecurity.be
8	Kruispuntbank Sociale Zekerheid / Banque-Carrefour de la Sécurité Social	https://www.ksz-bcss.fgov.be
9	ESS/MSS Persopoint	http://persopoint.be
10	FEDCOM	http://www.begroting.be/FR/Pages/fedcom.aspx
11	eID	http://www.eid.be
12	Kadaster / Cadastre	http://www.cadastre.be
13	CadGIS	https://finances.belgium.be/fr/E-services/cadgis
14	WebDIV	https://mobilit.belgium.be/fr/circulationroutiere/immatriculation_des_vehicules/webdiv
15	eBOX	https://www.mysocialsecurity.be/en/index.html
16	URBAIN	https://finances.belgium.be/fr/E-services/Urbain
17	MyMinfin	https://eservices.minfin.fgov.be/mym-portal/public/citizen/welcome
18	Belcotax-on-Web	https://finances.belgium.be/fr/E-services/Belcotaxonweb
19	Dimona	https://www.socialsecurity.be//site_fr/employer/applics/dimona/general/about.htm
20	Portail de la cartographique Région Wallonne (GeoPortail – PICC)	http://geoportail.wallonie.be/catalogue/b795de68-726c-4bdf-a62a-a42686aa5b6f.html
21	Geopunt (Geoportaal – CRAB)	http://www.geopunt.be
22	Digiflow	http://www.services.fedict.be/fr/Services/Digiflow
23	Telemarc	http://www.simplification.be/content/marche-public-telemarc

Source: FLEXPUB (2017)

The wider use of the above-mentioned e-services can be explained by several reasons. Firstly, there is a legal obligation for the administration to use some of these e-services (e-Procurement, Dimona, WebDIV…). Secondly, some of these e-services are authentic sources of key information that are widely re-used (National register, Crossroads bank of Enterprises, Cadaster, CadGIS, URBAIN, CRAB, PICC…). Among these authentic sources, it can been seen that several of them rely on location-based data, which confirms the high added value of these types of datasets. Thirdly, several of these e-services can be considered as "building blocks"[4] which have been encompassed in later developed e-services, for reasons of standardisation and interoperability (eID,

[3] The federal geoportal (geo.be) is not present in the list of e-services – it should be noted that the geoportal was only launched in March 2017 whereas the online questionnaire was running from December 2016 until February 2017.

[4] Such a "building block" can for example take the form of an "Identity and Access Management".

Federal Authentication Services, CSAM…) – those e-services being, in fact, themselves built on other "building blocks". Fourthly, some of these e-services are important and innovative tools that allow the easier exchange of data and information among the contributing stakeholders (Social security portal, Social security crossroad bank, Digiflow, Telemarc…). Finally, some of these e-services are simply more known by the general public, and thus also by the civil servants working in the administrations (Belcotax-on-web, MyMinfin…).

It is remarkable that some e-services have not or have little been mentioned only few times, although they are used by more than three organisations, such as the topographic basemap service Cartoweb.be, provided by the NGI and used in several organisations, or the Crisis and Incident Management tools (e.g. Incident and Crisis Management System (ICMS), ASTRID (dispatching and geoportal), CityGIS (dispatching), police systems, etc.). Furthemore, the team would like to underline that the degree to which a service is used does only partially say something about the importance of a certain e-service.

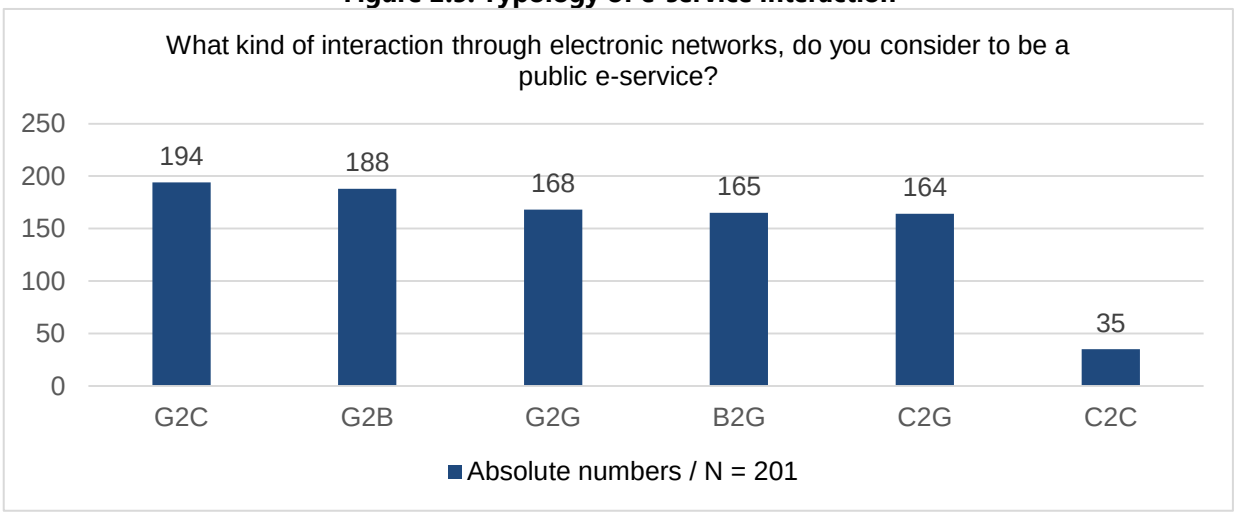
The wide variety of these e-services teaches us that there is a need for a common understanding of what an e-services exactly means and entails. This was, as will be discussed below, also one of the findings of the interviews. Focus should therefore not only lie on the development of future e-services, but also on defining a common understanding of what an e-service is.

SEMANTICS

E-SERVICES

A first element within the enabler "Semantics" is the concept of *e-services*. Especially during the interviews, it turned out that different organisations use very different definitions of what an e-service exactly means. For some organisations it is a simple website, for others it is an online process that allows users to handle their complete relation with the administration(s). As a result, organisations seem to miss the conceptual understanding of the meaning of an e-service. This is however a necessity for building a common e-service strategy.

Figure 2.5: Typology of e-service interaction



Source: FLEXPUB (2017)

The results of the survey, as visualised in Figure 2.5, show however that most respondents define a public e-service from a Government-to-Citizens (G2C) perspective (194 out of 201), or from a Government-to-Business (G2B) perspective (188 out of 201). Looking at the correlations between the different categories learns that G2C and G2B show a weak, but significant (at 0,01 level), correlation of 0,502. Also the categories Business-to-Government (B2G) and Government-to-Business (G2B) show a weak, but significant (at 0,01 level) correlation of 0,501. The strongest significant correlation was found between B2G and C2G. Those categories show a positive

correlation of 0,794. Remarkably however, those are the categories with the lowest number of responses – except for the category Citizen-to-Citizen (C2C), which was only ticked by 35 respondents. The results are not suprising, and in line with the expectations. Indeed, most respondents see administrative actions towards non-government actors as e-services, while part of the respondents also considers actions from non-government actors to the administration as e-services. This is fully in line with the development of e-services. The first steps focus on one-way activities from the administration towards citizens and private sector actors, while the next steps are considered to come into existence as the e-government of an administration matures (Layne, & Lee, 2001). However, one of the main difficulties of Layne, & Lee (2001) is the lack of a clear e-service definition and the suggestion created by the stage-model that the next stages are always 'better' than the previous onces.

This last element is countered by Lindgren, & Melin (2017). The next stage of e-services is not better than the previous one, but different. Different types of e-services can serve different purposes – and it is on this element that there should be focused. Lindgren, & Melin (2017) found 5 different types of e-services:

- Information e-service: a link that gives access to forms and documents;
- Automated (self-service) e-service: an interactive interfact that enables self-service for the user, with no human involvement in the back-office;
- Mediating e-service: an interactive interface that mediates/is part of a service process, in which the user indirectly interacts with a case handler;
- e-Service portal: an interactive interface that presents several related e-services together;
- Open data: API's provided online that other organisations can download an use.

Looking at the differences between the categories of respondents teaches us that in all categories, G2C interaction is ticked most often by all respondents. The only exception is the regional level, where the most often ticked category is G2B interactions, even though the difference is of only one occurrence (G2C: 63/66 – G2B: 64/66) and is therefore not significant.

LOCATION-BASED DATA

Secondly, understanding the meaning of "geospatial data" or "location-based data" seems to be a complicating factor. A group of organisations that are dealing with location-based data on a regular to very regular basis are very well aware of the meaning and added value of this type of data. However, other organisations – which are also using location-based data, but not as their main product – have more difficulties in understanding the meaning of the concept, and therefore also of perceiving the added value of this type of data for their services. This is unfortunate as the added value of location-based data does not only lie in making the data available so that it can be used in the specific context of geospatial acitivities, but even more so in policy domains that have until now not made use of the possibilities offered by adding location to the policy domain. Examples of this are the policy domains health care or the judiciary system.

A fairly simple definition of geospatial data has been provided in Art. 3 of the INSPIRE Directive. The directive defines it as "any data with a direct or indirect reference to a specific location or geographical area" (INSPIRE Directive, 2007, art. 3). The researchers used a very similar definition for the General Questionnaire, stating that spatial data is "all data linked to a location on the earth".

PROCESSES

In this category, the focus lies on the practices that the administrations resort to in order to take the changing requirements of stakeholders into account for the public e-service delivery. They are sub-divided as follows:

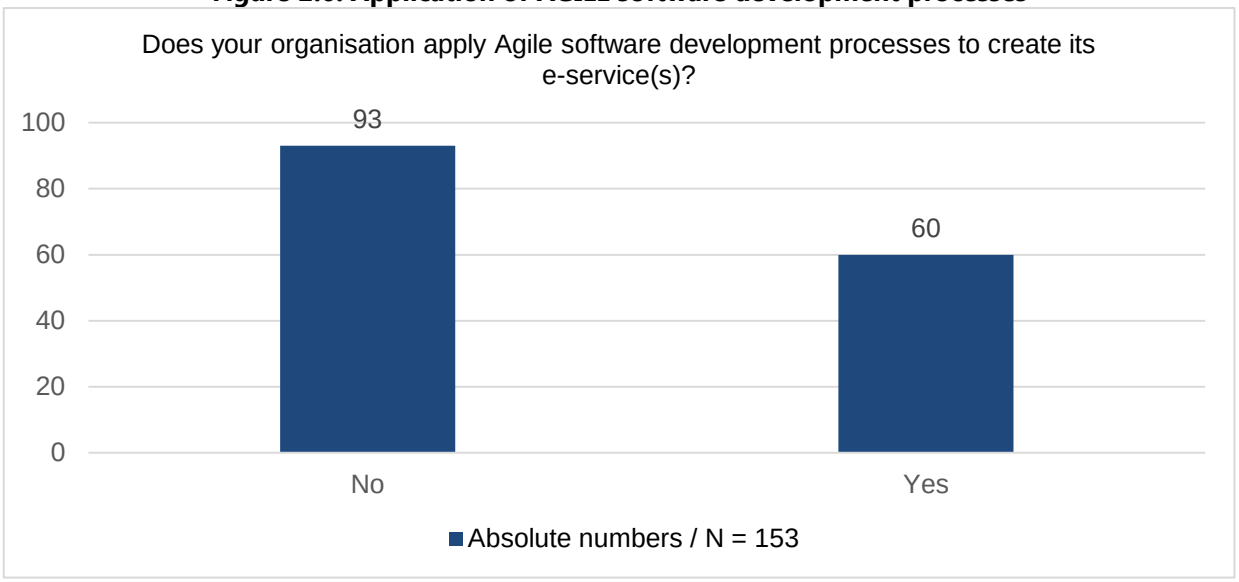
STAKEHOLDERS' PARTICIPATION IN E-SERVICE DEVELOPMENT

Although it is recognised as a success factor in e-service design, public e-services are too often developed for internal use without consideration for external users (citizens, businesses, other public partners…). This leads to e-services being developed internally, and never being truly fully exploited afterwards.

This participation is challenging because it is a time and money consuming process without clear methodology. The development process is already complex with different actors having conflicting goals (citizens that want a better service quality, IT managers that manage servers, Record managers that care about security of information, and other public servants that do not want too many changes in their workflow,etc.). The inclusion of all stakeholders adds complexity to the process and makes the planning of the development process more difficult. The inclusion of the stakeholders is also made more difficult by the very own nature of the administration and its hierarchical structure and the impact of the regulation on its existing processes. The work of incorporating feedback from stakeholders or the necessary signatures of the superiors leads to the risk that the software becomes obsolete if all stakeholders are involved. The particular challenge of finding users makes it even harder. Indeed, as the user group of the citizens potentially consititutes the whole population, there is a need for a multichannel methods to collect requirements. Different categories of stakeholders have different requirements and require different types of requirement collection methods (e.g. in case of earthquake, older generations might phone the authorities while the younger generation might simply post about it on Facebook or Twitter and it will be for the administration to go get the data actively).

Furthermore, there is also no clear responsibility about who should gather the requirements (between private or public sector, or between levels of power in Belgium). The last problematic aspect of participation resides in the changing political support. On the one hand, politicians push for increased citizen participation but, on the other hand, there seems to be a certain fear of citizens' feedback and how it may impact the existing or foreseen processes. The main challenge here is the reconciliation of the concept of representative democracy, in which politically elected actors steer the actions of the administrations – although it should be underlined that the administration has a level of independence of the political level – and the concept of direct democracy, in which citizens and other actors gain direct influence on the political and administrative level.

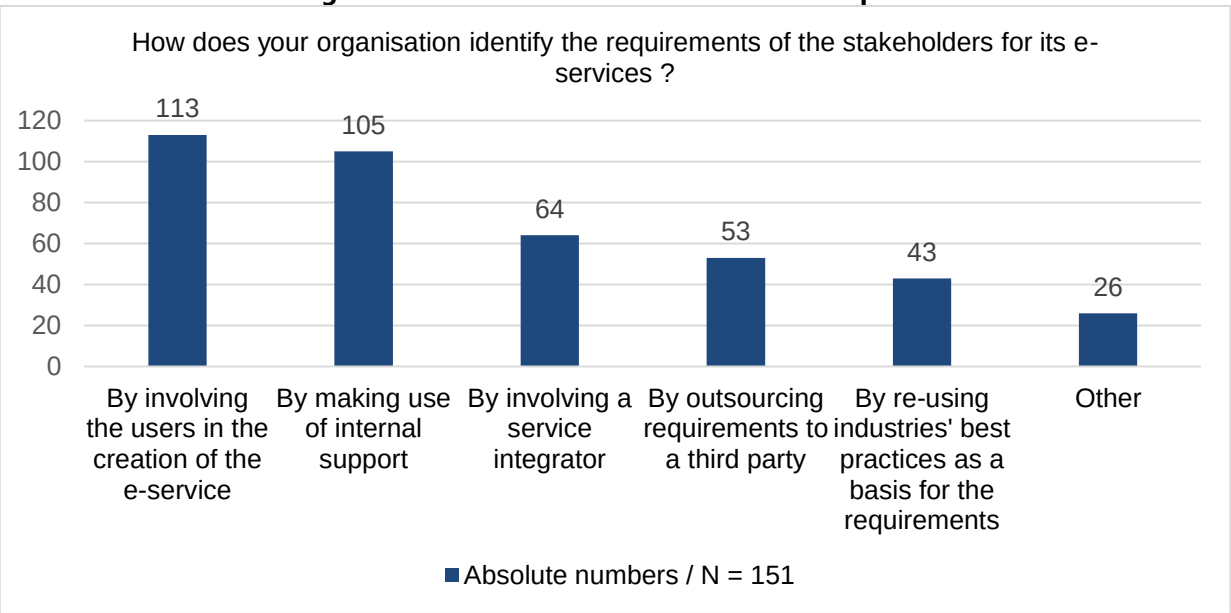
Figure 2.6: Application of AGILE software development processes



Source: FLEXPUB (2017)

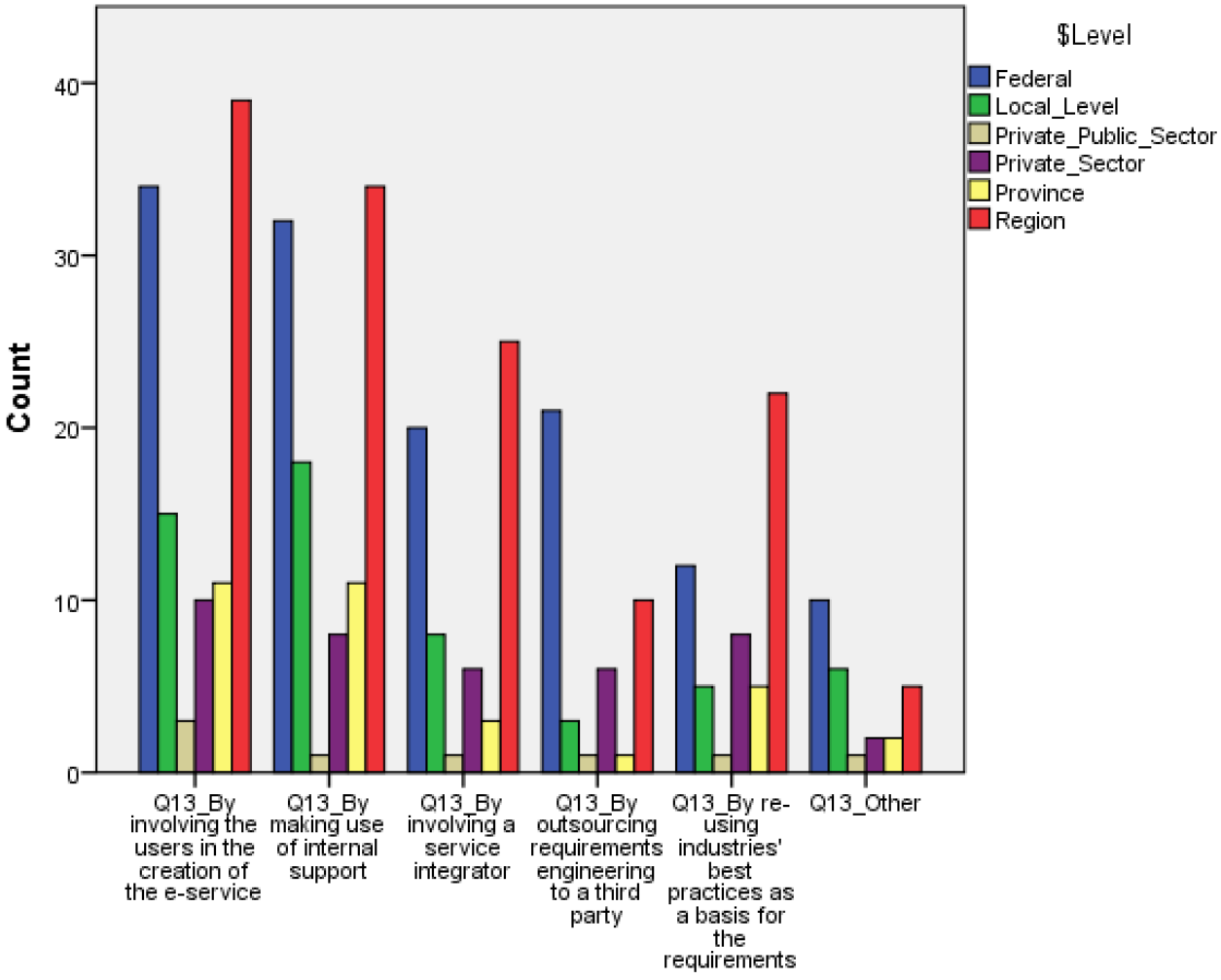
As shown in Figure 2.6, 60 out of 153 respondents (39,2%) stated that they apply agile software development methods to build their e-services. The most often used agile method is SCRUM. It does not come as a surprise, as it is one of the most widely adopted method in public or private organisations. A number of other methods were also refered to, such as Lean Development/Manager (18), Other (10), Tailored-fit Method (8), Feature-Driven Development (6), Extreme Programming or XP (3) and finally Dynamic Systems Development Method or DSDM (2). Furthermore, 5 respondents did not know which method they use. The most promising lead for further research about this question will be to study how public sector organisations adapt the AGILE methods to fit into a public setting. This lead is further underlined by the high number of respondents that ticked the category "Other". This suggests that administrations are using customized and tailored-fit methods.

Figure 2.7.1: Identification of stakeholder requirements



Source: FLEXPUB (2017)

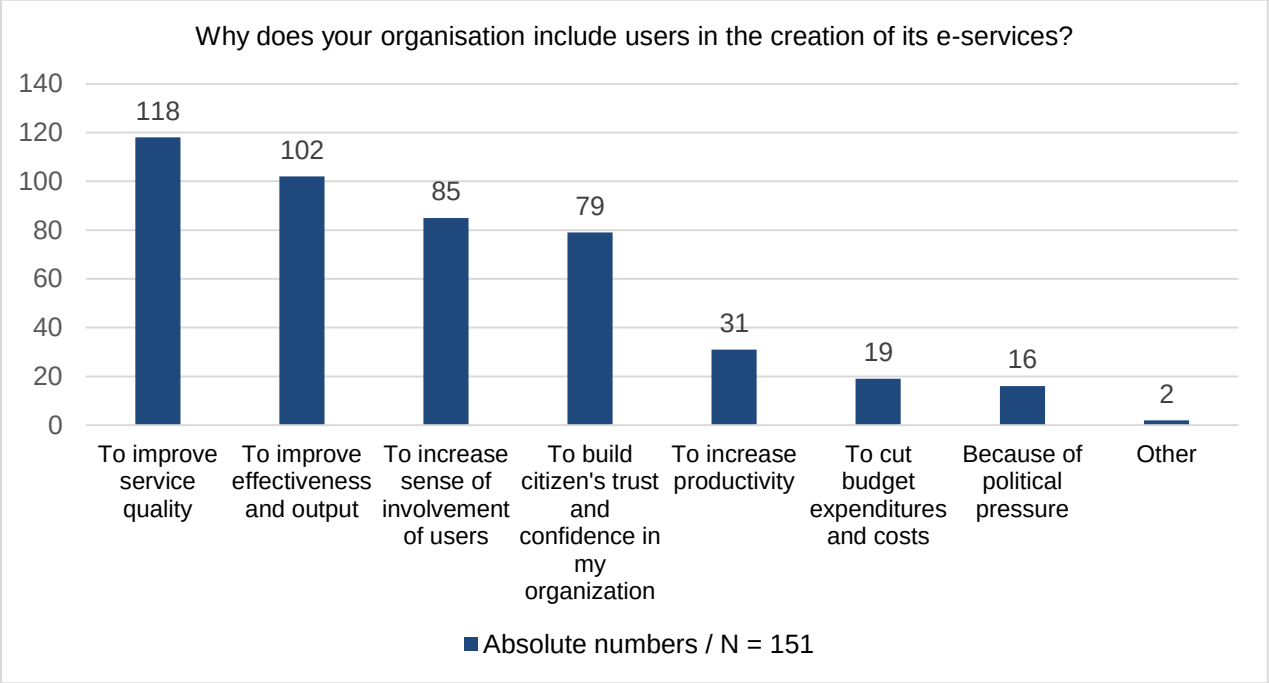
Figure 2.7.2: Identification of stakeholder requirements – Level comparison



Source: FLEXPUB (2017)

These methods are linked to stakeholder's participation as they advocate for an increased consideration of users in the development process. Regarding the correlations, no major findings were extracted. Only the category "Other" is significantly correlated with all other categories which shows that further research could be done in the field of participative organisation, to determine other participation methods. There are no significant differences between goverment levels regarding the methods. It is only noticeable that Regions report more the use of a Service Integrator than the federal level. An interesting research question is whether the Regions have invested more (money, legal position) in a service integrator than the federal level. The federal level also outsources the requirement engineering process to a third party twice a much as the Regions. The detailed overview of the differences between the different levels can be found in Figure 2.7.2.

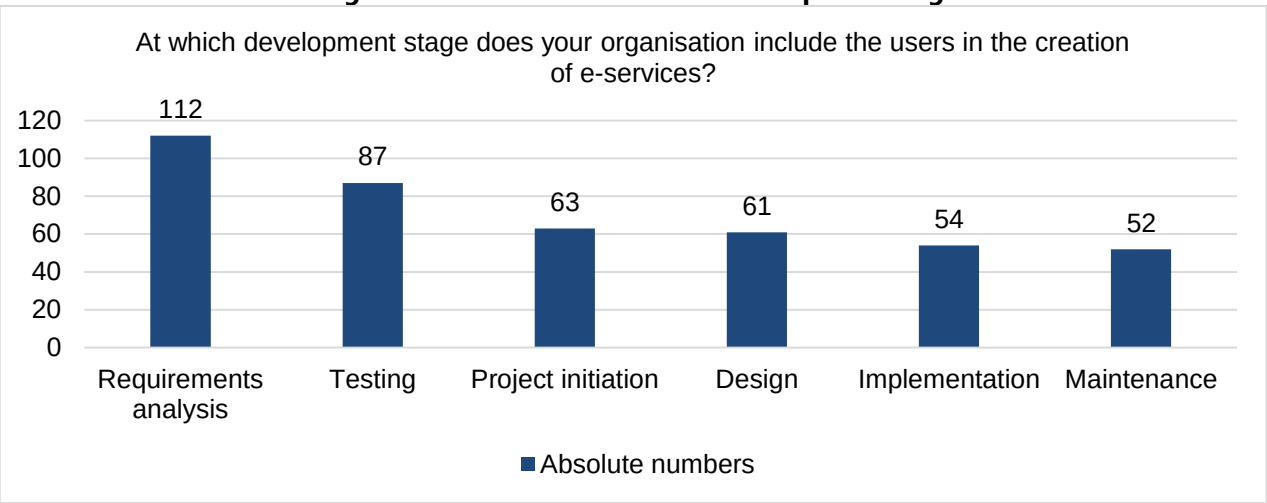
Figure 2.8: Reasons for including users in creation of e-services



Source: FLEXPUB (2017)

There is a strong will to reach a better service quality for users, to improve the effectiveness and output of e-services, and to increase the sense of involvement and trust of users. These two last objectives demonstrate a specificity of the public sector regarding citizen participation, which proves that the participation of users in the pubic sector is not completely similar to the user participation in Information Systems in general. In the public sector, users are not merely seen as consumers of the e-services, but also as citizen having democratic rights that need to be taken into account. A last finding comes from the low result for "Political Pressure". It shows that participation is performed for internal reasons instead of external ones. No relevant findings could be derived from the correlation analysis and the analysis of the differences between the categories of respondents.

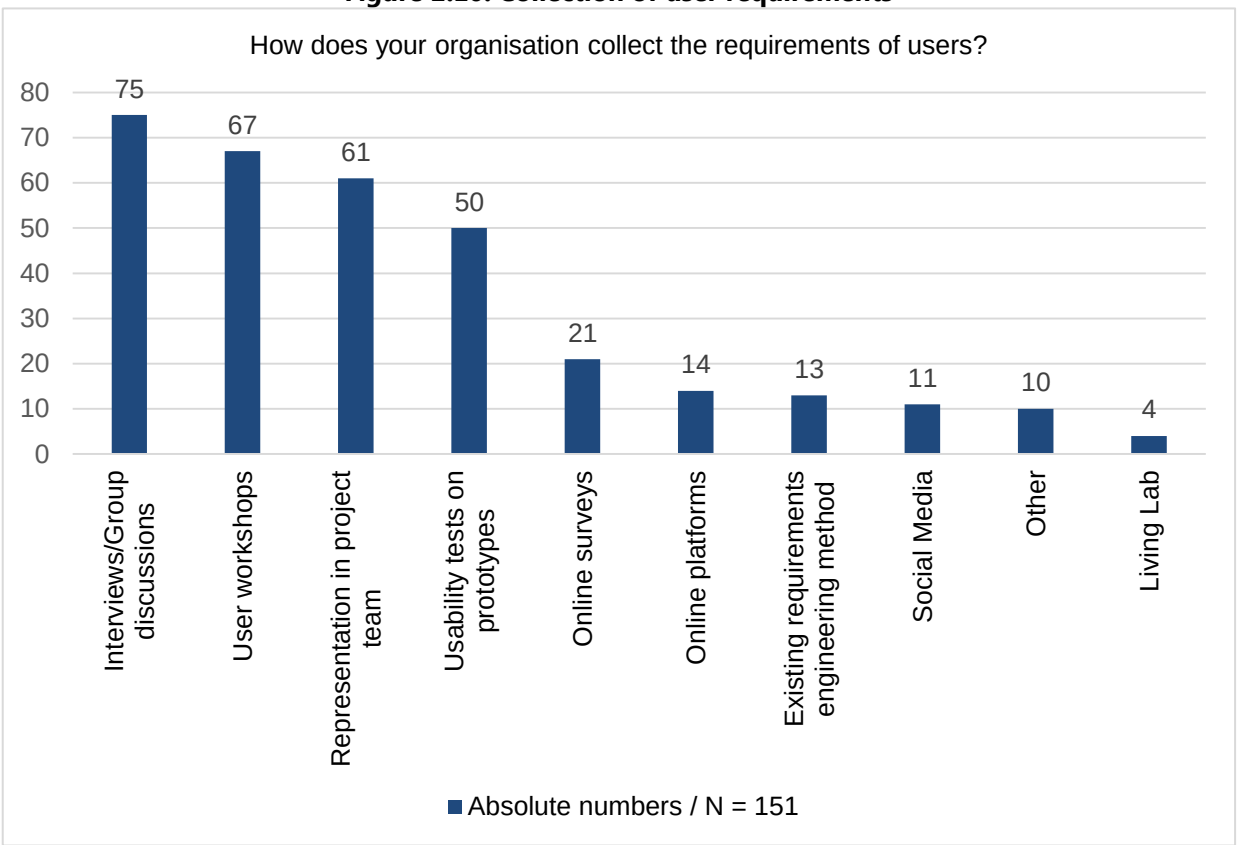
Figure 2.9: Inclusion of users in development stages



Source: FLEXPUB (2017)

As demonstrated in Figure 2.9, this participation can happen at different stages of the development process. This question details the most widely accepted stages of software development from the Waterfall model. Participation most commonly happens in the requirement analysis and testing of the e-services (resulting in a list of stakeholder requirements). This requirement identification is thus often done through user involvement but also by making use of internal support or of a Service Integrator. The design and implementation stages are, unsurprinsingly, lower as they require advanced ICT skills. However, the maintenance stage (evaluation of the e-service) is quite low and reveals a lack of user involvement for the long-term evaluation of services. Improvement could also be made in the project initiation stage (decision to develop an e-service). No relevant findings could be made in the correlation analysis and in the comparison between respondents categories.

Figure 2.10: Collection of user requirements



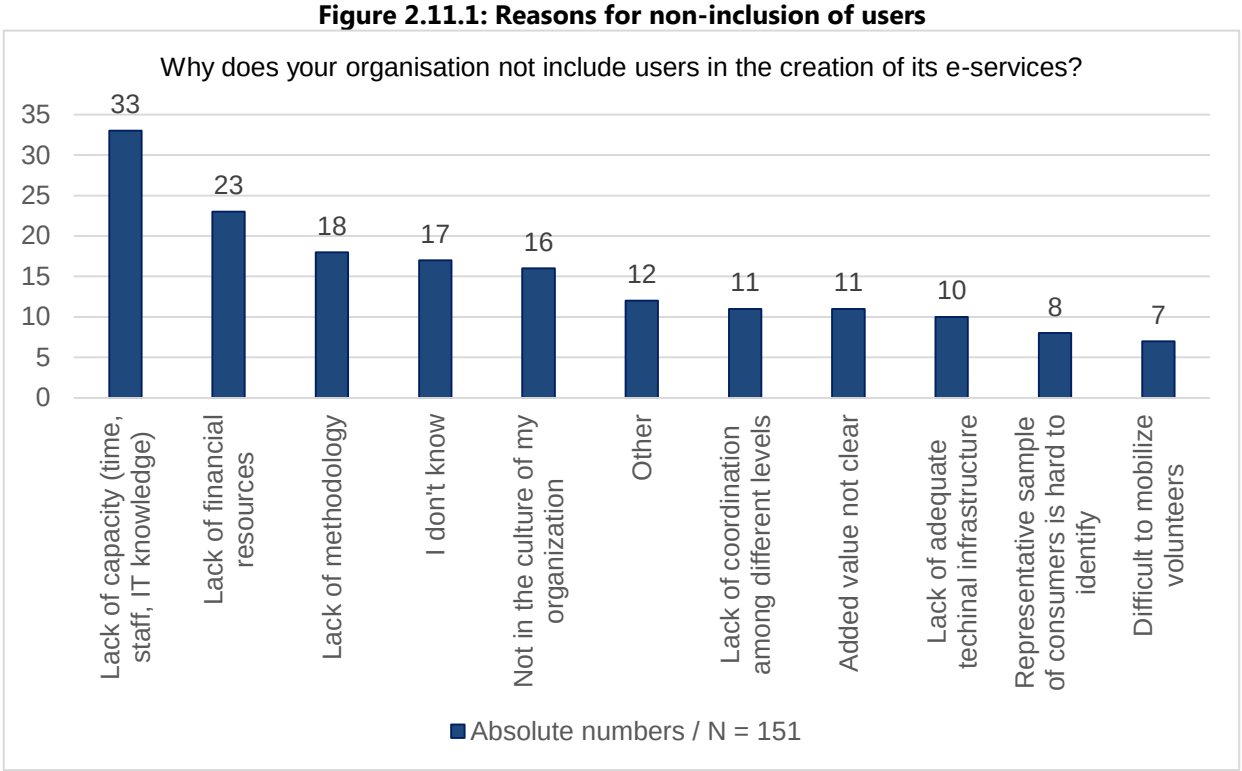
Source: FLEXPUB (2017)

Regarding the specific method of requirement identification, Figure 2.10 outlines that there is a clear distinction between traditional small-scale methods that are often used (interviews, group discussions, user workshops, prototyping) and more innovative large-scale methods that are rarely used (online surveys, platforms or social media). It is noticeable that Living Labs are neither largely used nor known although they could constitute innovation ecosystems that explore new concepts and ideas by involving government, businesses and citizens. Possible explanations why the relatively low scoring methods score so low, could be amongst others:

- the methods are unsufficiently known, hence it is not clear how they could support requirement identification;
- the methods are conveived as being costly (time, money) and hence would complicate the planning process (unknown impact on the planning process and resources, unknown advantages of the methods compared to the more straight forward, or better known, higher scoring methods);
- relative unexperiencedness with the methods, which implies the need to invest time and money in its development and implementation. The latter could be to heavy to carry by a small and indidividually operating e-Service developer. A service integrator could take up such a role as facilitator;

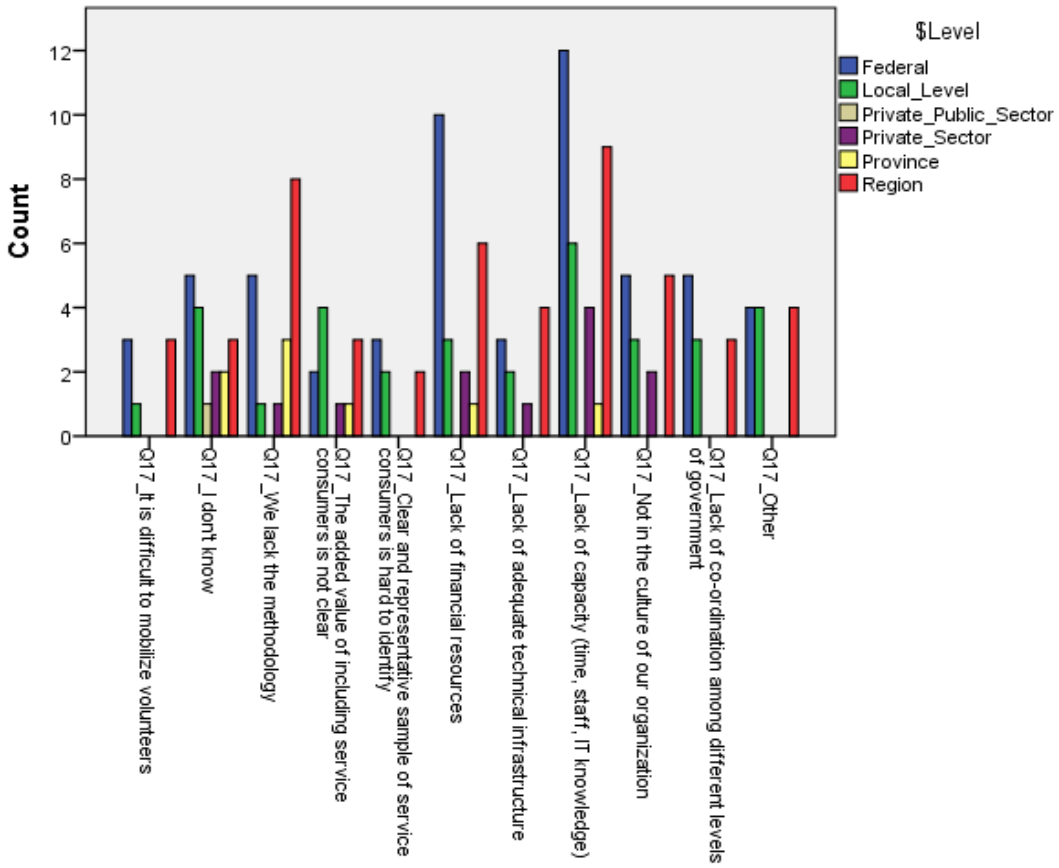
No relevant findings could be made in the correlation analysis and in the comparison between categories of respondents. During the interviews however, several respondents made clear that there is an interest in those large-scale methods such as Living Labs and other methods. Furthermore, several public administrations indicated that they are active on social media, but mainly to share information and only to a limited extend for other reasons.

Figure 2.11.1: Reasons for non-inclusion of users



Source: FLEXPUB (2017)

Figure 2.11.2: Reasons for non-inclusion of users – Level comparison



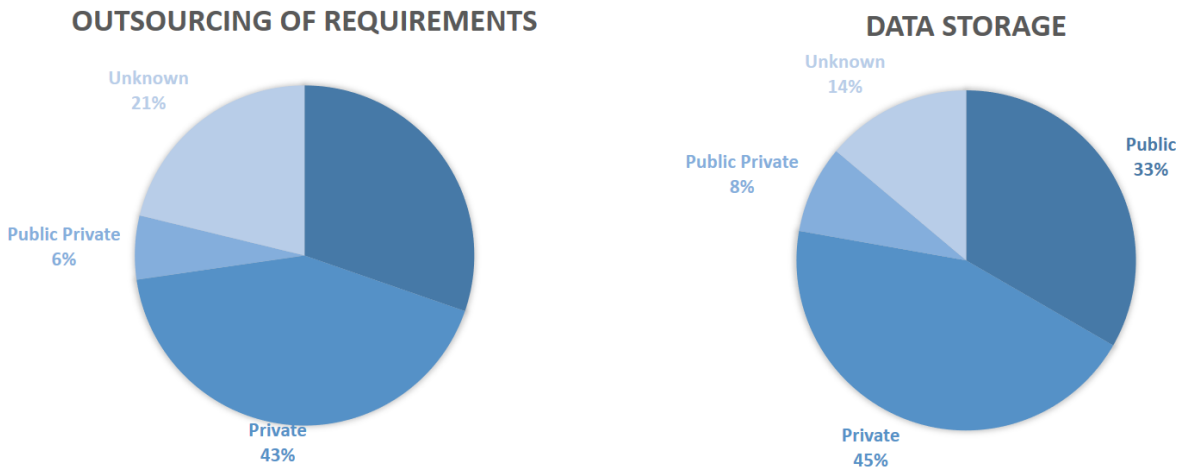
Source: FLEXPUB (2017)

To conclude on this challenge, the three main barriers for this participation are the lack of capacity, financial resources and methodology. Regarding the difference between levels, it is noticeable that the Regions suffer the most from a lack of methodology, whereas the federal level suffers more from the lack of financial resources and capacity. For all categories of respondents, the number of respondents that ticked the category "I Don't Know" is rather high. This may suggest that administrations did not yet consider how to include users in the process, or did not even consider making users participate.

DIVERGENCES OF OPINIONS ON PRIVATE SECTOR PARTICIPATION

This second challenge is linked with the potential role of the private sector within public processes. In the administrations, there is an acknowledgement of private sector advantages such as faster time-to-market, relevant knowledge etc. Although it rises the question whether the public sector could approach these advantages by adopting processes that are used in the private sectore. However, there is a group of administrations that fears the "public sector marketisation". Furthermore, the participation of the private sector is also challenging due to an investment issue. Indeed, public organisations do not always have the financial resources to hire private sector representatives. Finally, no standard contract exists to deal with private sector actors and avoid possible problems (handling of personal data, or vendor lock-in, for instance).

Figure 2.12.1: Outsourcing of requirements / Figure 2.12.2: Data Storage



Source: FLEXPUB (2017) / Source: FLEXPUB (2017)

In the questionnaire, the topic of private sector participation was quantified thanks to two questions about the role of private sector in the outsourcing of requirements, and in its role pertaining to data storage. In both cases, it was striking that the balance between public and private was respected, with a bigger part for private sector. This raises, however, the question of the ability of administrations to develop their e-services internally (and will be linked to the Public Sector Attractiveness challenge identified in the enabler "People, Skills and Competencies").

ORGANISATIONAL STRUCTURES

One of the enablers of the COBIT framework focuses on the organisational structures. Those structures are of crucial imprortance as they have an effect on how organisations can deal with existing data and e-services as well as with future e-services and data. Two key challenges were identified for this enabler.

INTER-ORGANISATIONAL RELATIONS BETWEEN DIFFERENT ADMINISTRATIVE LEVELS AND AT THE SAME LEVEL

The first challenge focuses on the inter-organisational relations, and can be split in two categories. The first one are the relations between different administrative levels and the second are the inter-organisational relations at the same level. The inter-organisational relations between different administrative levels seems to be challenging for organisations within one level, but also for the wider administrations – they function in partial isolation and focus on their own legally defined task and policy areas. It means that organisations have difficulties in coordinating their activities (in this case the development of geospatial e-services and the processing of geospatial data) between different levels.

This first challenge is often linked to the strong federalised state-structure of Belgium – which is a complicating factor in the coordination of geospatial e-services and data – but a similar challenge exist for organisations at the same administrative level.

Also within one administrative level, a need exists for stronger inter-organisational relations. At the federal level, a higher level of independence between the organisations seems to exist as a result of historical reasons. Some organisations with a vertical role at the federal level have much more resources than those that are required to exercise more horizontally related task. This leads to difficulties for the organisations with a horizontal role to execute their tasks.

Examples of those vertically functioning organisations at the federal level are the FPS Finance, the FPS Interior Affairs, the FPS Justice, the FPS Foreign Affairs and the Ministry of Defence. All those organisations have their

own ICT or HR departments, and have – especially in comparison to the horizontal or cross-cuttings federal organisations – more resources, both from a financial and staffing perspective. This situation has led to difficulties for the horizontal organisations to position themselves in comparison to the vertical organisations.

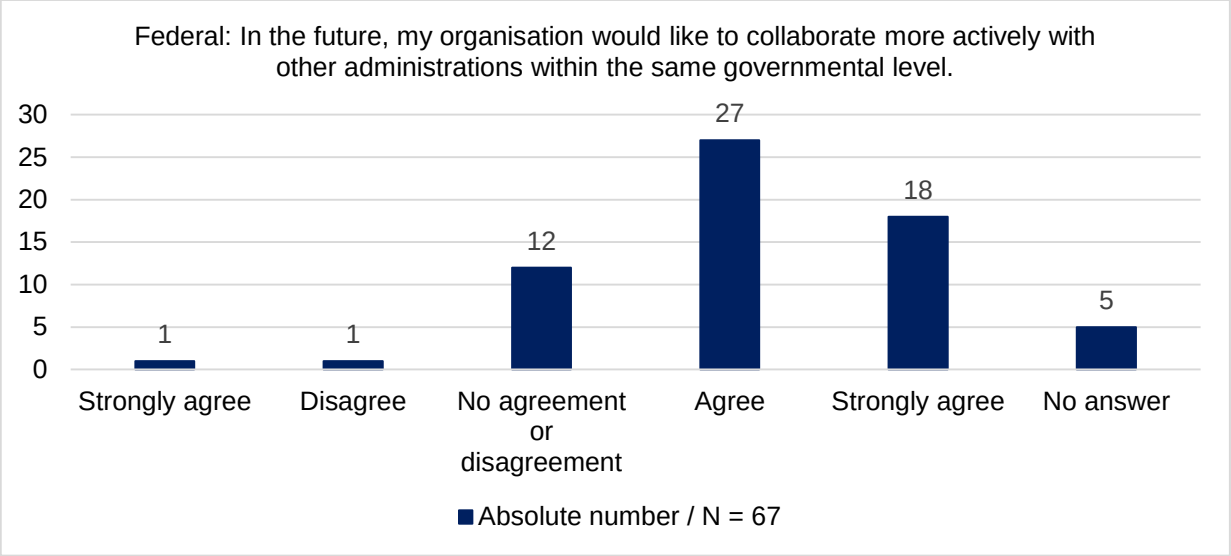
An overall coordination structure for e-services and location-based data only seems to be partially in place at the federal level. There are indications, given to the researchers by the respondents, that a two-pillar system exists within the federal administration. The formerly existing FPS FEDICT was expected to take a leading role in the development of an overarching policy for e-services, but as understood from the interviews the organisation lacked the necessary financial resources and political support. Furthermore, the important role of SMALS – mainly in the social security domain of the federal administration – made it difficult for the FPS FEDICT to establish a coordinating and key role at the federal level. As a result of this, this two-pillar system seems to have been institutionalised, as organisations seem to be more connected with one or the other organisation. It should however be underlined that SMALS has no formalised role within the federal administration, and whenever there is an influence of this organisation on the policy development process, it is in an informal way.

There are also federal scientific organisations. The researchers were able to interview the Royal Observatory of Belgium as well as the Royal Meteorological Institute. From those interviews, it can be understood that those scientific institutions have inter-organisational coordination difficulties related to availability of resources. Those organisations do not always have sufficient means to organise the exchange of geospatial data or to make use of the services of the private sector. Moreover, the FPS FEDICT did not provide them with support in the development of an overarching geospatial e-service policy.

Looking at the regional administrations – those are mainly dealing with geospatial data – teaches us that there are strong differences in the coordination structures between them. Within the Flemish administration, a leading role is taken by the Agency Information Flanders (AIV). One of the respondents, from a different administration than AIV, underlined in this respect that AIV is well-respected as a results of its active and constructive role. Also the combination of geospatial data with the overall e-government policy is remarkable – but not an exception as can be seen from the Brussels Captial Region – in the Belgian context. In the Brussels Capital Region, the main role is taken by the Brussels Regional Informatics Centre (BRIC). Since the 1980's, it is responsible for coordinating both geospatial data and telecommunication developments. It is however mainly due to the INSPIRE Directive that a clear coordination has been developed for geospatial data, but coordination for e-services remains weak. Finally, the Walloon Region seems to have struggled with the development of a clear coordination structure for geospatial data and e-services, whereby different actors had (and still have) strongly related tasks which require sufficient coordination. Overall, also here there seems to be an effect of the INSPIRE Directive – which led to the establishment of a Walloon coordination structure for geospatial data. It should however be underlined that coordination remains a challenge.

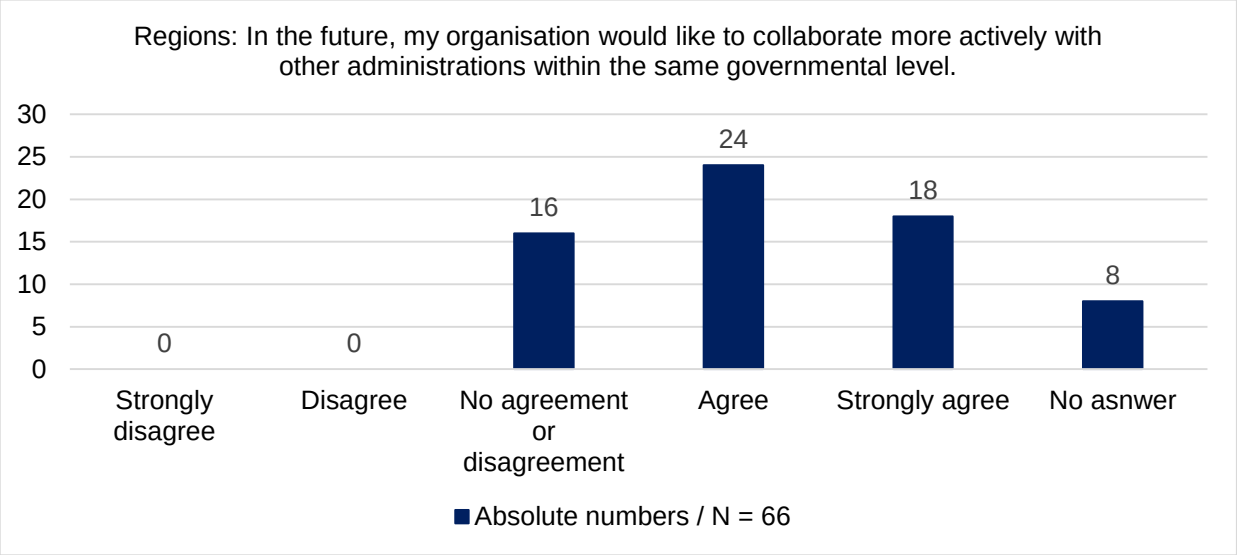
Another element, recurrent within the federal and regional administrations, are the personal connections. Those seem to be at least as important as the official and formalised connections between organisations. Even though it is necessary to have coordination based on formalised connections between organisations, the personal connections often seem to be very important, and somehow leads to a breaking down of the silo culture (see below). Such a situation can however become highly problematic. When the personal connection is lost, the connection between two organisations, or parts of the organisations, is lost as well. In a worst case scenario, the dominance of personal relations over formalised and official relations creates the risk for personal conflicts that might inhibit the proper functioning of an organisation or parts of the organisations, and influence the related policy. In this regard, one of the respondents informed the researchers that data is sometimes exchanged without the formal concent of the hierarchical superior of the organisations, as this would lead to the involvement of the judicial team and create bureaucratic difficulties delaying the exchange of data and the overall policymaking process. The respondents recognised in this regard the problematic situation from a legal point of view, as these exchanges occur in a grey zone that could lead to serious issues.

Figure 2.13: Willingess to collaborate more actively within the same governmental level (Federal)



Source: FLEXPUB (2017)

Figure 2.14: Willingness to collaborate more actively within the same governmental level (Regions)



Source: FLEXPUB (2017)

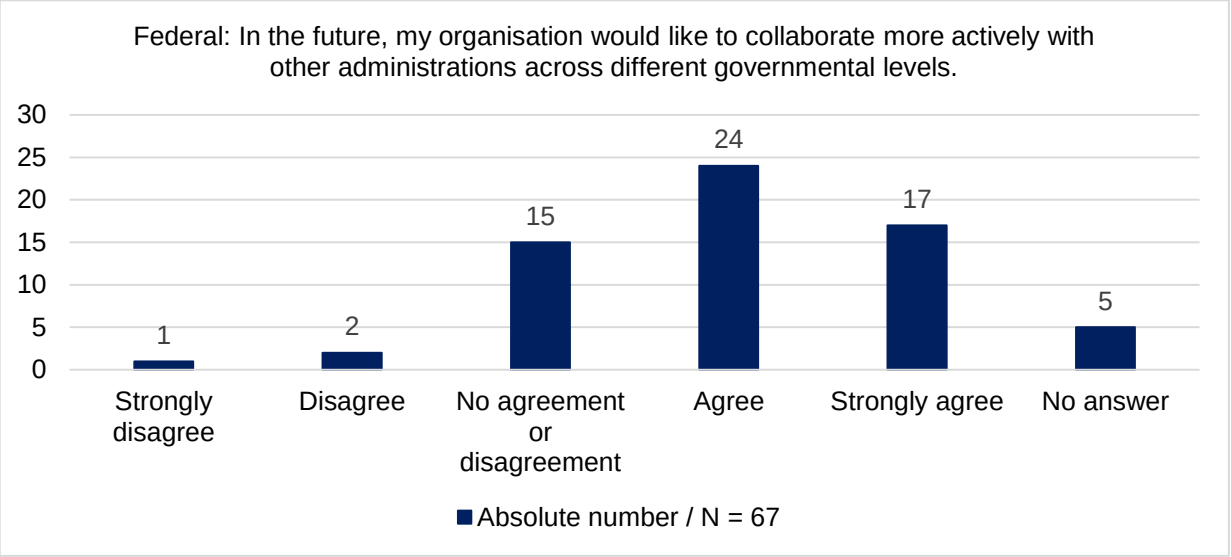
Looking at inter-organisational relations between different administrative levels teaches us that coordination structures exist for various programs. Examples are the different cooperation committees for addresses, the cadastral information, e-government and the implementation of the INSPIRE Directive. It should however be underlined that the coordination that emerged out of the coordination agreements is often mainly used to share information and not so much for institutionalised cooperation. One of the main achievement in this regard seems to be the establishment of the Coordination Structure for Patrimonial Information (CSPI), an inter-federal organisation that was created as a result of the state reform of 2001.[5] The federal and Brussels Capital Region administrations have delegated staff, but the organisation is still waiting for the staff of the Walloon and Flemish administrations. Furthermore, geospatial data is exchanged between organisations, but not via a coordinated governance structure. Instead, bilateral agreements are used. Good and clear examples of this are the sharing of cadastral information between the FPS Finance and AIV (Figure 2.46: Cadastral Planning).

Nevertheless, there is also some inspiring feedback from the questionnaire. The results indicate that both at

[5] Please note in this regard that it took the federal administration and the three regional administrations 15 years to find a common agreement on the creation of this inter-federal organisation.

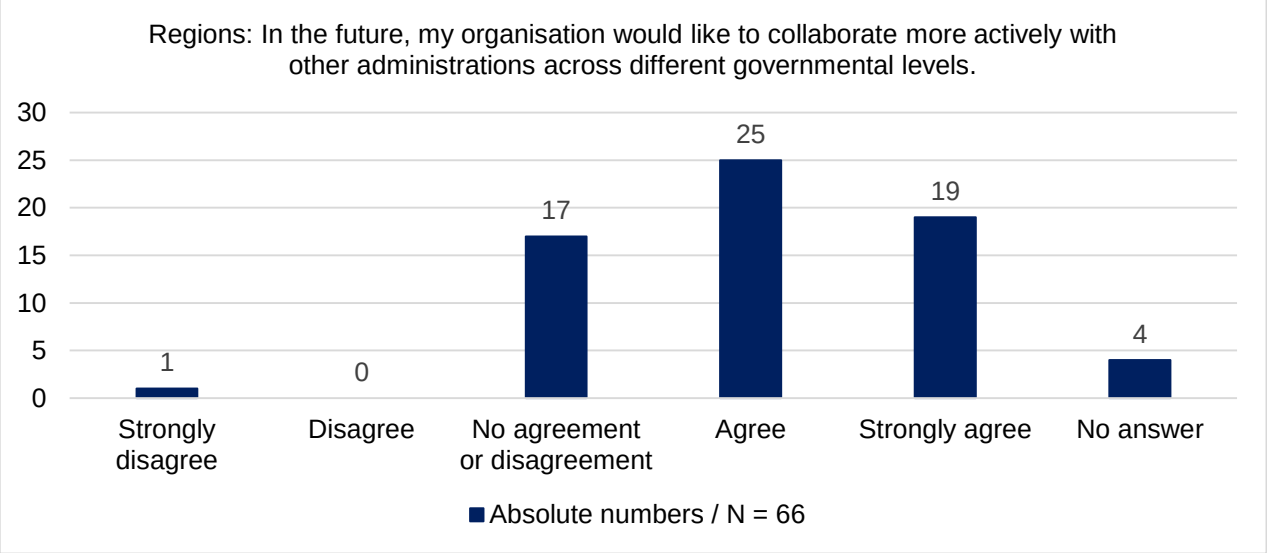
regional and federal level, there is strong willingness to increase the cooperation between organisations, both at the same administrative level and between different administrative levels. Those results are shown in the Figures 2.13 to 2.16. It should however be underlined that for each groups ("federal" or "regional") and for each form of cooperation ("same governmental level" or "across different governmental levels") the number of respondents which answered "No agreement or disagreement" is rather high. However, based on those rather positive results, the researchers argue that the problem is not so much the unwillingness to collaborate. It is rather based on the difficulties encountered due to the state structure, which has as consequence that different administration are working on different policy domains or are working on different aspects of the policy cycle at the same moment, and might therefore have more difficulties to cooperate. Furthermore, this seems also to be related to the fact that different administration are not all at the same state of progress when it comes to the development of geospatial e-services and have, overall taken, different perspectives on the future steps concerning the development of geospatial e-services and geospatial data.

Figure 2.15: Willingess to collaborate more actively across different governmental level (Federal)



Source: FLEXPUB (2017)

Figure 2.16: Willingess to collaborate more actively across different governmental level (Regions)



Source: FLEXPUB (2017)

LEADERSHIP FOR THE DIGITAL AGENDA

Another challenge, linked to the inter-organisational relations, is the need for clear leadership for the digital agenda. This point is mainly, but not only, relevant at the federal level, where a two-pillar structure exists due to historical reasons (FPS FEDICT and SMALS). Although there is leadership, it is divided between organisations and there is – within the federal administration – no single overarching actor that is able to steer the direction of location-based data and/or e-service developments. Once again the researchers would like to emphasize that SMALS has, in comparison to the former FPS FEDICT, no formal role within the federal administration. An extra indication of this is the observation that there is no Chief Information / Interoperability Officer (CIO) at the federal level. This challenge is strongly linked to the third challenge of the enabler "Culture, ethics and behaviour", the lack of sufficient political support, but is however much more focused on the organisational needs than on the cultural needs. Indeed, political support is provided by the Minister responsible for the Digital Agenda (see enabler "Culture, ethics and behaviour"), but .the competence of the Minister towards the digitalisation of the federal administration is shared with other Ministers. Indeed, digitalization is a horizontal policy area which implies that other policy areas are also affected. This is the so-called matrix model chosen by the federal administration. As a result, this situation can be challenging on the road towards more uniformed leadership because these political deciders do not always pursue the same policies. From an administrative coordination leadership perspective, it can also be argued, as it was indicated by respondents, that the position of the formerly existing FPS FEDICT was different. FEDICT was a self-standing Federal Public Service, while the new organisation structure relating to digitalisation policy – the DG Digital Transformation – is included in a broader Federal Public Service. The respondents expressed concern about the DG's visibility. However, this integration into the multi-disciplinary FPS BOSA creates encouraging prospects for stronger collaboration, strategy and policy development. Only time will tell what the impact of the recent reforms of the federal digitalisation policy will be, and specifically the creation of two new structures (DG Digital Transformation and the G-Cloud Initiative) will be.

Looking at the area of geospatial data teaches us that the NGI, which is – from an organisational point of view – the federal actor with a key role in geospatial data, is not the focal point for geospatial data. Indeed, at the federal level, there does not seem to be a "natural" leader concerning the topic of geospatial data (except for the FPS Finance in the field of cadastral information). Parallel to the lack of common acquisition of hardware and software in the next chapter, the NGI has taken up the role as purchasing centre for the federal administration of routing and traffic data, thereby saving the federal government as a whole on a yearly basis, several hundres of thousands of euros on licence fees alone. Other advantages are that more organisations use the same dataset (facilitating better collaboration) and that organisations have more time to spend on other issues, as organising individual call for tenders is no longer necessary.

Overarching leadership also plays an important role with regard to the coordination of:

- the collection, management and distribution of (location-based) data, and the avoidance of multiplication of the same effort in that regard. As such the DG Digital Transformation of FPS BOSA is as a federal service integrator and can legally approve authentic sources. Although up to now, no authentic sources have been officially legally defined yet. At regional level several authentic sources have been officially legally defined already.
- a more integrated approach for the development of e-services, which are up to now often 'individually' set-up within the so-called 'silo-structure' of the organisation or administration;
- datacollaboration between and within administrative levels. As discussed in the previous paragraph inter-organisational collaboration existswithin and between the different administrative levels. However, those collaborations could exist of many parallel and similar activities, which implies multiplication of efforts. For example, many similar location-based datasets exist throughout the different governmental levels. Although similar, most of the times they are not compatible. Before those datasets can be used they need to be processed, which can require a strong effort of the organisations that use that data (think of e.g. regional authentic road data that is combined into a country wide dataset by several federal organisations; , or location-based data about the fire hydrants in Belgium that is asked, collected, and compiled by many organisations from all governmental levels)

Looking at the other Regions teaches us that the Walloon Region has struggled with this leadership, but the eWBS seems to have taken this role now partially on board. Nevertheless, the leadership for geospatial data seems still to be lacking. In the Brussels Capital Region and the Flemish Region, this leading role has been taken by respectively the BRIC and the AIV, whereby e-government and geospatial data are both competencies of the same organisations, which makes interconnections easier. In Flanders, however, the practical development of e-services remains in the hands of the so-called Facility Company.

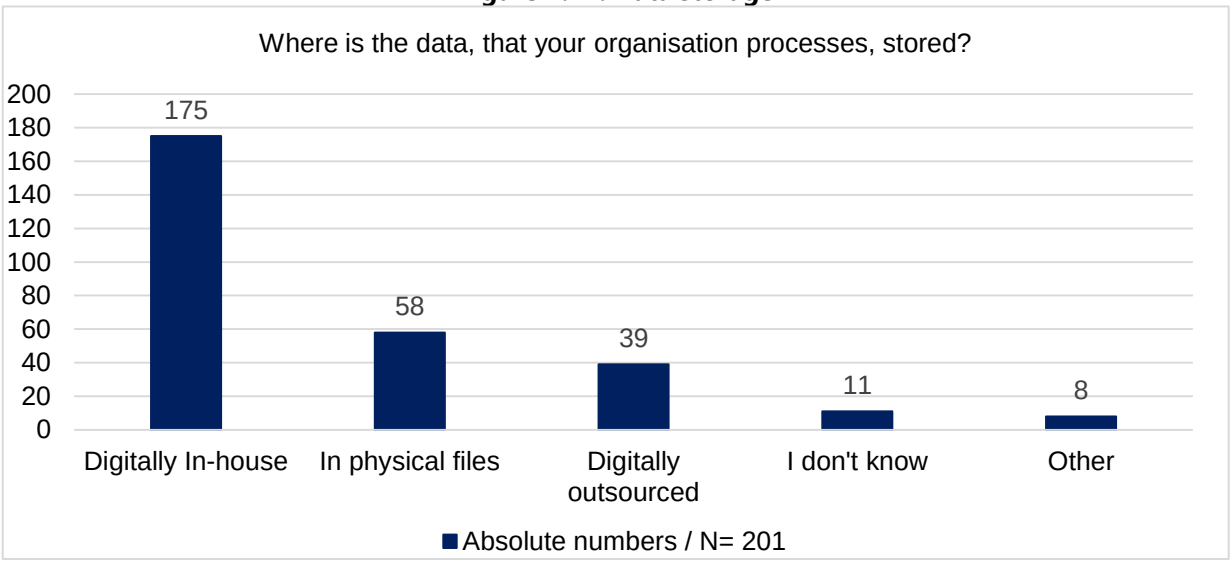
SERVICE INFRASTRUCTURE AND APPLICATIONS

This category of challenges mainly refers to the infrastructure, architecture, standards, and associated technologies that the federal government provides for information technology processing and e-services. The researchers divided it into a number of sub-categories.

LACK OF SHARED HARDWARE AND SOFTWARE

This challenge expresses that there is a lack of common acquisition of software and hardware in Belgium. The main barrier for the acquisition of software comes from the different specificities of stakeholders. Indeed, the more you go to the business end of the infrastructure, the more difficult it is to mutualize software/licence due to specificities. Across different levels, this sharing is even more difficult as the investment and procurement cycle of the different levels is not the same. Finally, each level has also reached the "critical mass" where they have enough with their own volumes and do not need to coordinate with different budgets. However, this seems to be evolving as a result of the federal G-Cloud, which is expected to lead to an increase in the sharing of hard and software. The sharing of infrastructure is furthermore intensified by the increased financial concern. The overall decrease in government budget also had (and still has) repercussions for the financial options related to e-services and is expected to lead to more sharing. Finally, the EU vision on re-use of building blocks to build e-service might also influence this challenge – the former FPS FEDICT focused on the development of building blocks to develop future e-services.

Figure 2.17: Data storage



Source: FLEXPUB (2017)

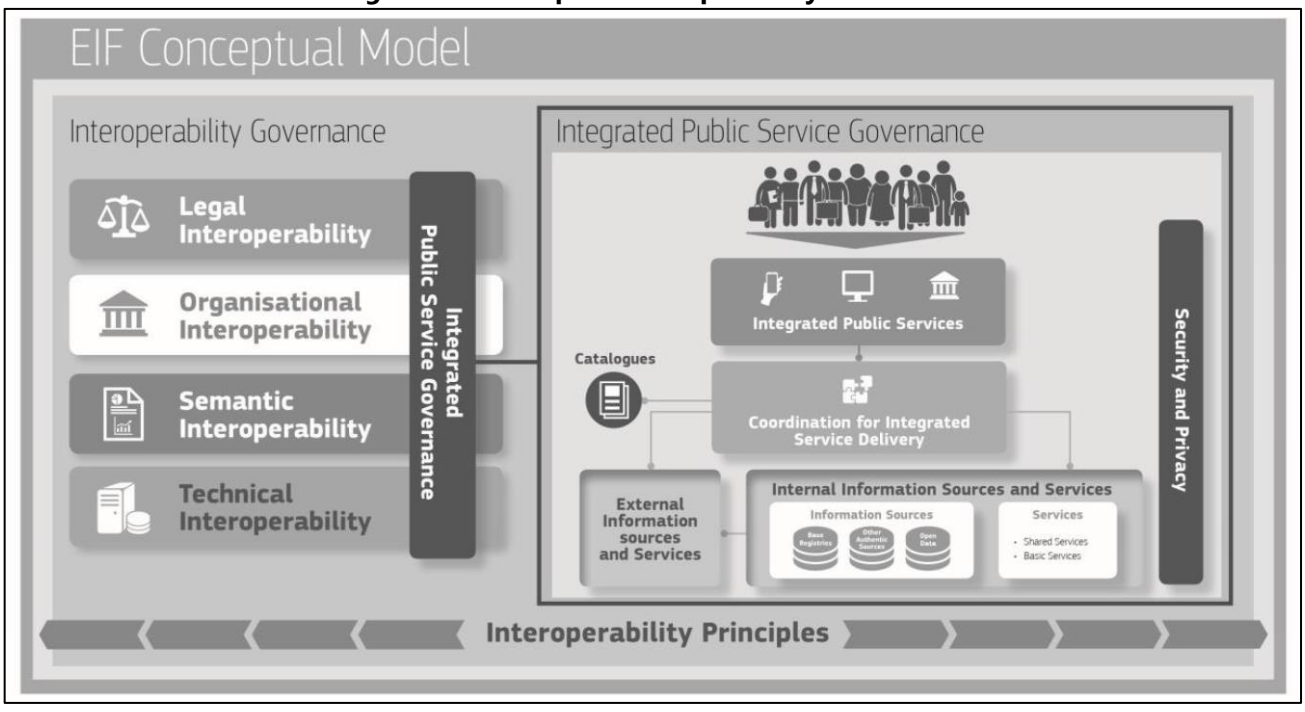
Figure 2.17 refers to one specific infrastructure element of administrations: data storage. It is noticeable that most administrations keep their data digitally in-house. However, there are still a lot of respondents answering that they keep it in physical files (for the details about the outsourcing of data storage, please consult the challenge "role of private sector" in the enabler "Process"). This storing of data is however essential to tackle as there is much hesitation in administrations about the storage media: deterioration of CD, demagnetization of hard drives etc. Cloud Computing becomes a viable option for stakeholders with less powerful servers (e.g. local

level) but with the fear to stock sensitive data (e.g. CBSS or Defence-related data).

INTEROPERABILITY

This challenge expresses issues for the exchange of data between administrations. Due to the lack of implementation oftechnical standards, the data exchange is difficult and time-consuming for administrations. This low implementation is in part due to the a lack of awareness about the existing technical standards (such as ISA or ISA[2]). This lack of standardisation is also a result of the multi-governance structure of Belgium: nobody can impose such standards or practices across the different levels of power (e.g. a federal law would only apply to federal administrations and not to regional administrations). BeST-Address is a good example of this lack of standardisation due to the different data models of the three Regions and the federal administration. Nevertheless, progress has been made in this area, and especially in the area of geospatial data. In light of the INSPIRE Directive (2007), EU Member States started to develop national geospatial portals and were obliged to define the metadata for a number of geospatial data categories. Also the European Interoperability Framework (EIF - adopted in 2010, revised and updated in 2017) led to an increased attention for interoperability. In this regard, it has to be mentioned that the federal administration via the former FPS FEDICT and the current FPS BOSA work on a National Interoperability Framework. The EIF approaches interoperability from different perspectives. Not only is there need for technical interoperability – which is even regarded as the last stage in developing interoperability – but even more so for legal, organisational and semantic interoperability. In the revised version of the EIF, an overall vertical element has been added, namely the need for an integrated public sector governance. The 2017 EIF can be seen in Figure 2.18.

Figure 2.18: European Interoperability Framework



Source: European Commission (2017)

USER-FRIENDLINESS OF E-SERVICES

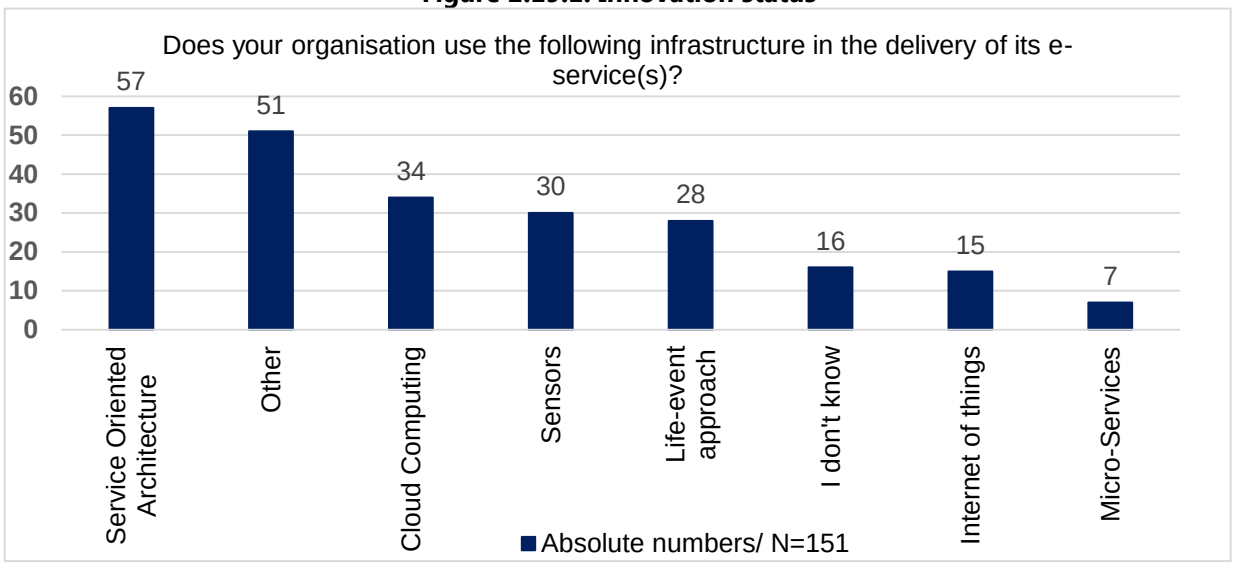
The user-friendliness of e-services was identified by the respondents of the questionnaire as the priority for future e-service delivery. However, at this moment, it is still very volatile in function of the administration that offers it. Furthermore, from the citizens' perspective, there is a lack of an integrated "one-stop-shop" for e-services in Belgium. This single point of entry for citizens could result from a "soft" (via a portal) or "hard" integration (between systems). Due to interoperability issues between systems, a single portal for e-services (via MyBelgium for instance) is implemented. However, soft integration portals are not sufficient anymore, as

citizens are expecting more individualized answers and services. It should nevertheless be acknowledged that part of the new DG Digital Transformation's tasks is the need to focus more on the user-friendliness of e-services and to take, in general, a more user-centric approach. Futhermore, also at the Flemish level, the focus in delivering e-government and e-services is put on user-centricity (as well as on efficiency). However, the main difficulty of administrations – not only in Belgium, but also in a European and global context – is to transform from an inward-looking perspective to a more user-centric perspective and to define, depending on the role taken by the organizations, what it means to act in a user-centric way.

INNOVATION STATUS IN ADMINISTRATIONS

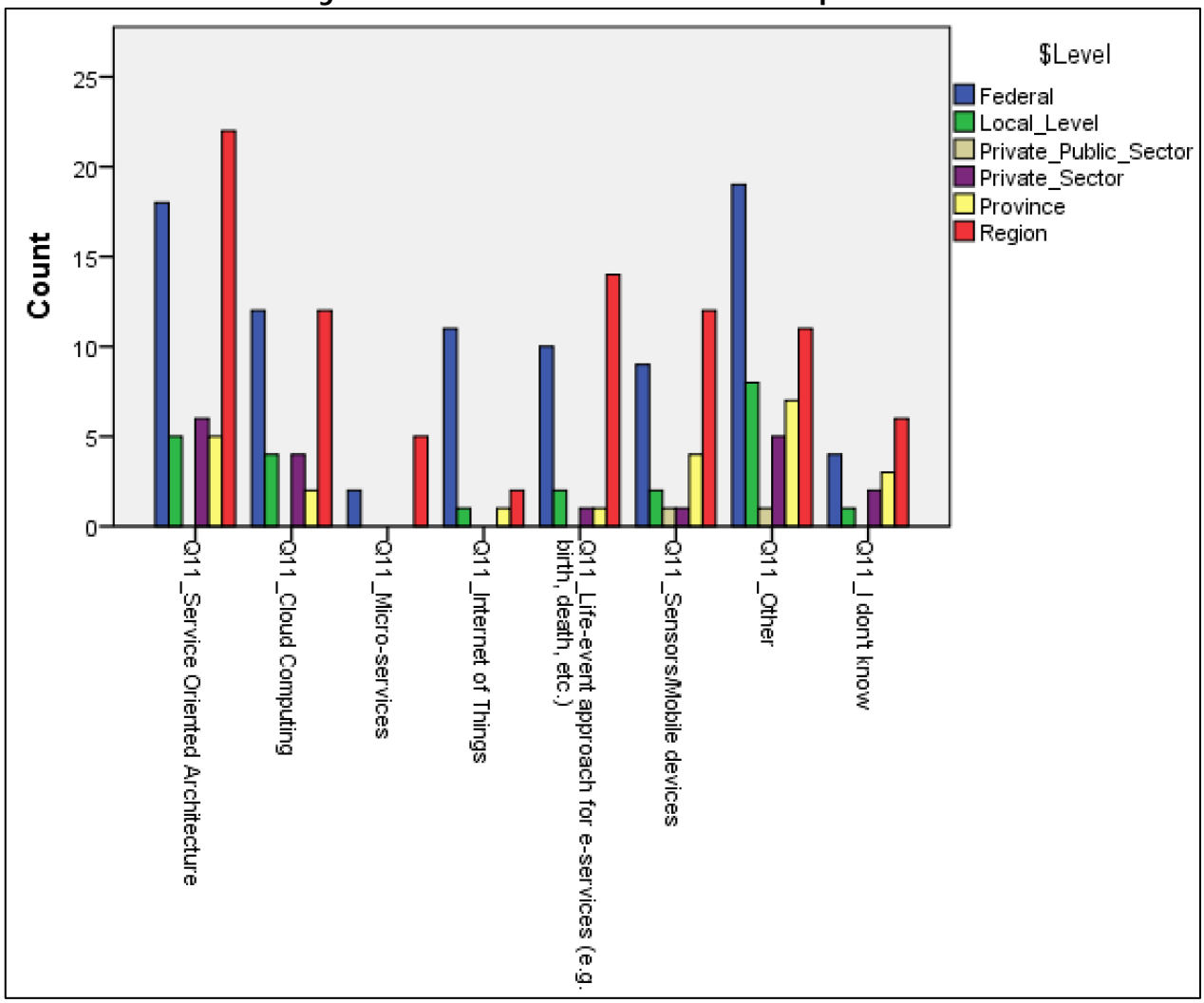
On a more general note, the respondents were asked to report on the status of the use of certain type of infrastructure within their organisation. Those types of infrastructure can be regarded as innovative tools – see Figure 2.19.1. The most heavily used paradigm is the service-oriented-architecture. This is quite logic due to the necessity of data and service exchange between stakeholders at the same/different level(s) of power. Cloud Computing, the Life-event-approach and the sensors were also well cited in the responses. The innovation paradigm with the lowest usage-level in the questionnaire was the micro-services. This confirms the lack of a building blocks' methodology in the administrations.

Figure 2.19.1: Innovation status



Source: FLEXPUB (2017)

Figure 2.19.2: Innovation status – Level comparison



FLEXPUB (2017)

Regarding the difference between levels, there were no findings worth mentioning, except for the Internet of Things paradigm that seems to be much more present at the federal level than at the regional one.

PEOPLE, SKILLS AND COMPETENCIES

For this COBIT enabler, three challenges have been identified, namely: Digital divide among citizens, public sector attractiveness and lack of financial resources.

DIGITAL DIVIDE AMONG CITIZENS

This challenge relates to the necessity for administrations to cope with the digital divide among citizens. More precisely, they should be aware that if a large part of the population awaits from them to be innovative and to follow the wave of the new technologies, some citizens prefer to function the "old way" and to have personal contacts via visits to the administration. Moreover, a performant digital infrastructure is not everywhere and at any time available. As such, the paradigm of "digital-by-default" is a nice slogan, but it should be ensured that citizens and businesses keep the opportunity to access services offered by the administrations through other channels as well. Nobody should be "left on the side of the road" as a consequence of an "all and only digital" strategy.[6] It is, however, known that administrations try to increase the use of their e-services by citizens and

[6] This is recognised by both administrations and politicians at different governmental levels, including the federal level.

businesses by facilitating the access to e-services, by increasing the complexity of non-digital services or by decreasing the challenges for a digital demand. An example of such an action is the online tax form offered by the FPS Finance. Part of the form is already prefilled in the online form, delivers extra online services such as optimisation and a provisional calculation of the tax assessment and can be handed in later, whereas the offline tax form remains highly complex to use and must be handed in one month earlier.

Furthermore, the researchers found out that the digital divide is not only a material problem pointing to users which are unable to use digital tools. There is a group of citizens which are able to use digital tools, such as social media, e-commerce and online banking, but which do not use the digital options provided by the administrations. This problem is also acknowledged by the European Commission in its Annual eGovernment Benchmarking Report 2016 as one of the main challenges for the Belgian administrations. Belgium is a country where there is, on average, a high level of education and economic wealth, but the use of public e-services remains overall rather low.

Another element related to this digital divide among citizens is the digital divide within the administrations. The degree of digitalisation varies strongly from one organisation to another, and within one organisation there can be strong differences between different staff members.

PUBLIC SECTOR ATTRACTIVENESS

This challenge relates to the fact that it is complicated for the public sector to compete with the private sector when it comes to attracting specific strongly demanded profiles, such as IT specialists. Indeed, the public sector is rarely able to offer as interesting "extra-legal advantages" as the private sector and seems to suffer from a negative image: the impression exists that there are not enough innovative projects to work on compared to the private sector. This can lead to unfortunate situations where administrations are unable to rollout their e-service projects, due to a lack of sufficiently skilled personnel. An example of how to deal with such a situation is the structure taken by SMALS. Altough the organisation legally belongs to the "public sector" (as it is owned by other public sector organisations, only serves the public interest and thereby has no commercial or industrial interests and has corporate rights), it functions similarly to a private sector company from an economic perspective and therefore offers much more competing saleries and rewarding schemes to IT specialists.

LACK OF FINANCIAL RESOURCES

This challenge relates to the budgetary shortcomings that hamper the development of e-services. It is worth mentioning that while this challenge was often emphasised in the replies to the questionnaire, it was much less cited as an issue during the interviews. A clear example is the former FPS FEDICT. The organisation witnessed an overall decrease of its budget due to the budgetary shortcomings of the federal government. This led to a situation in which it became highly difficult for the FPS to innovate and develop new tools, and created a 'survival situation'. Furthermore, the federal government demanded that the overall ICT budget would be decreased. Although this can indeed lead to an increased level of cooperation between organisations –the G-Cloud is a clear example of this – it should be underlined that reducing the budget for ICT, one the one hand, and proclaiming the development of new ICT tools, on the other hand, is incompatible. A decrease of the budget leads to less investments, while the overall objective of increasing greater efficiency via digitalisation costs more money – especially in the first years, both because of the innovation aspect and the knowledge that projects can fail – which leads to a loss of money.

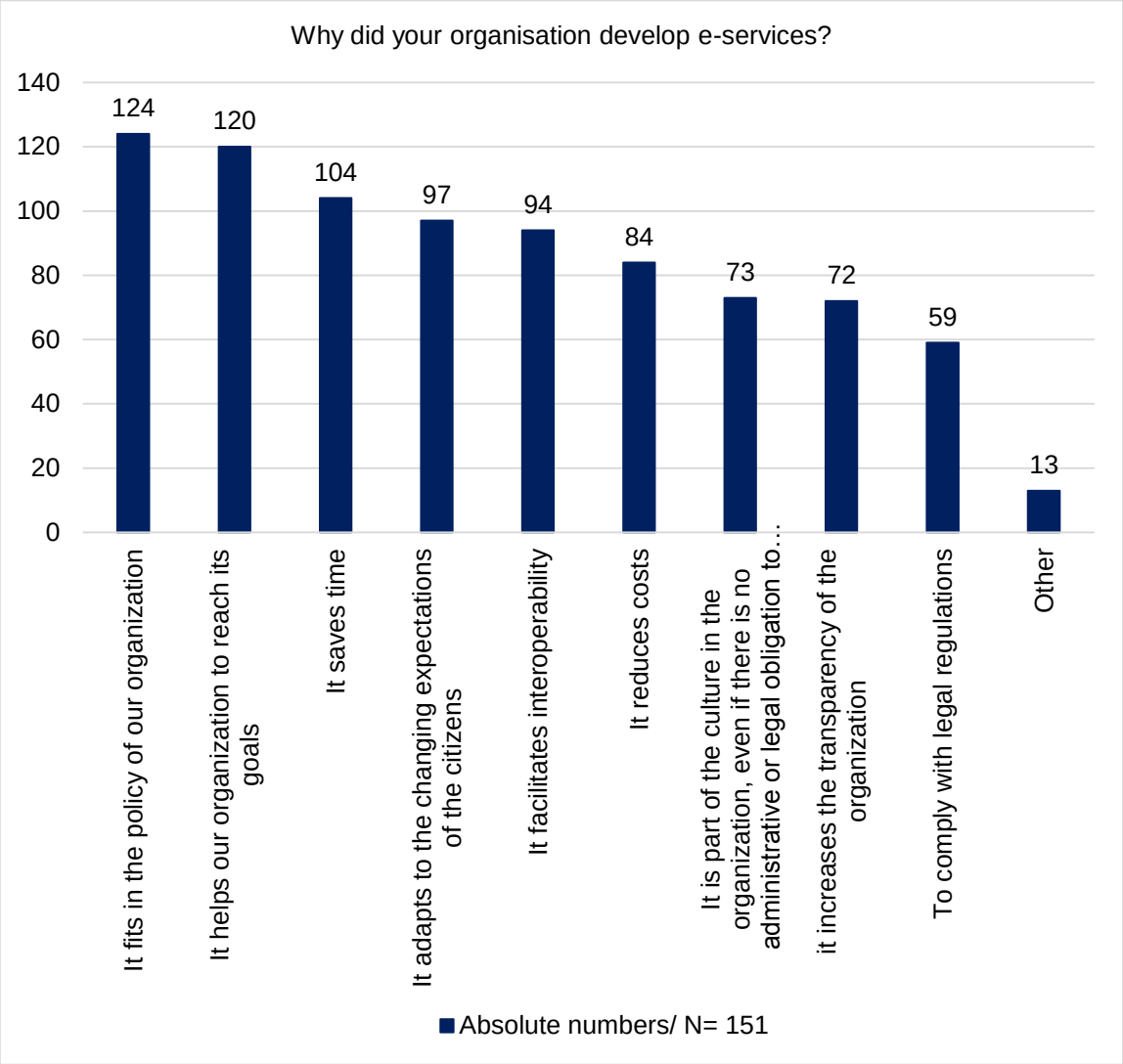
CULTURE, ETHICS AND BEHAVIOUR

Similarly to the previous enabler, the researchers defined three challenges which fit into the enabler 'culture, ethics and behaviour'. Culture, a challenging concept, is difficult to change within organisations. It requires strong efforts and resources and has the disadvantage of being rather invisible and to be focused on the long-term. Nevertheless it is part of the key to success, definitively in a context of digitalization.

FEAR OF CHANGE FOR IMPACT OF TECHNOLOGIES

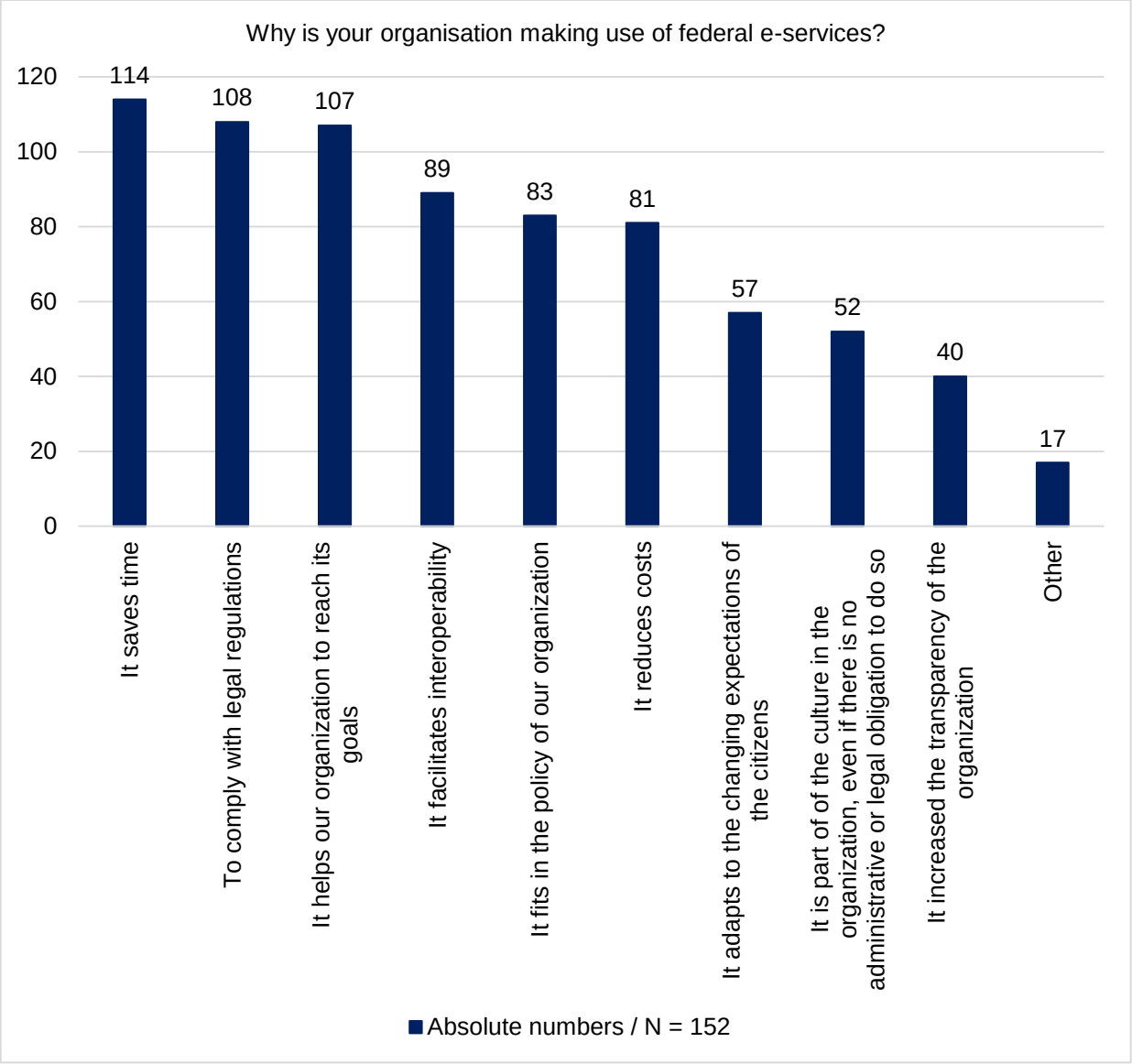
A first challenge to work on is the fear of change for the impact of technologies which might change the working environment and/or taskswithin organisations. Staff working in an organisation can consider technology as problematic when the organisation does not sufficiently clarify the role of this technology. Therefore, it is important to include the organisation's staff in the development and maintenance of technology, such as e-services. This is however not something particular for the federal administration, as also other administrations – both in Belgium and abroad – as well as the private sector organisations face similar challenges.

Figure 2.20: Reasons for developing e-services



Source: FLEXPUB (2017)

Figure 2.21: Reasons for using federal e-services



Source: FLEXPUB (2017)

Figures 2.20 and 2.21 indicate that the reason why organisations use (federal e-services) or develop their own e-services has nothing to do with the culture of the organisation. Rather, it is done because it is part of the policy, or because it helps the organisation to reach its goals. This is an important element as the buzzword of these days and the trend in political statements is the need to develop a digital society in which digital interaction with administrations is the basis. This is exemplified by the Tallinn EU Ministerial Declaration of 2017 in which the Ministers responsible for digitalization proclamed digital-by-default as one of the spearheads of the EU and national digital policies for the next years (Tallinn EU Ministerial Declaration, 2017). Nevertheless, this requires a shift in the culture of the organisations involved. Digitalization should be seen, within the organisation, as the defining element and be part of the overall culture of this organisation.

STRONG SILO STRUCTURE

A second challenge that was identified is the strong silo culture that exists in the administration. Each organisation is very much focused on executing its own vision, developing its own policy and reaching its own goals. Although it could be argued that the federal political agreement between the government parties creates a common policy, this only partially seems to be the case. It creates an overall structure, but the policy development and implementation still needs to happen in the different organisations of the federal

administration. Furthermore, this has also grown out of the historical independence of different organisations within one administration. Personal relations within one organisation and across organisations can also have an impact. As a result, organisations do not always look sufficiently at other organisations when developing e-services. Rather than learning from other organisations, there is a preference to focus on the own internal way of working and as a result it can block the further development of the interoperability. In this respect, the 'only once principle' is of crucial importance, as organisations and / or elements within one organisation need to re-use the data that is already known by the administration. This leads to the legal obligation of cooperation. It remains to be seen if it will be sufficient to bring down the silo culture as a whole, as it not only about sharing data within one administration, but also about developing and sharing e-services. This challenge is strongly related to the inter-organisational relations and the need for increased cooperation and guidance of it.

LACK OF SUFFICIENT POLITICAL SUPPORT

A final and third challenge to work on is the lack of sufficient political support. Respondents indicated to the team that there was, and sometimes is, a lack of sufficient long-term reflection on digitalisation, and that support is mainly focused on short term achievements. Looking specifically at location-based data, the baseline measurement indicated that there is a lack of sufficient focus on this type of data, which can partially be explained by the difficulty to understand its added value for policy making and service delivery. Although politicians seem to understand the need to digitalise the administration – because it can create efficiency gains – the attention is only focused on digitalization, e-government and the digital society in generic terms, and much less on the concrete development of an e-service policy that covers the whole administration. In this regard, it is promising to see that the DG Digital Transformation is able to undertake policy development tasks and works in a strategic way towards the future development of a federal e-government approach and policy. An example of this is the contribution of the DG Digital Transformation to the Policy Note of the Minister responsible for the Digital Agenda.

Currently there is a Minister for the Digital Agenda who takes an active position both on the national and international scene to bring the federal e-government developments forward. So far however, it has not always been clear which concrete actions can be taken to advance the digitalisation and development of e-services within and by the federal administrations – nevertheless, the researchers would like to underline that in very recent times a number of concrete actions towards the end-users have been launched. One example of this is the "e-box initiative" (De Croo, 2017). One of the interviewed respondents made clear that the Minister or politician in charge needs to be able to win something, in a political or financial way. Furthermore, another respondent underlined that the development of e-services and e-government is not a goal in itself, and much more a tool to achieve something else: it is a transversal topic and there is a need to create an economic output via digitalization. This last element can also explain the lack of concern for location-based data. It is an unknown topic, whereby politicians do not always grasp the added value of the data and how it can be used. Finally, some respondents pointed to the struggle between administrations and political cabinets. An example of this lack of sufficient political support is thatthe FPS FEDICT's role as a leader for the digital transformation at federal level was not sufficientlyestablished on the long term.

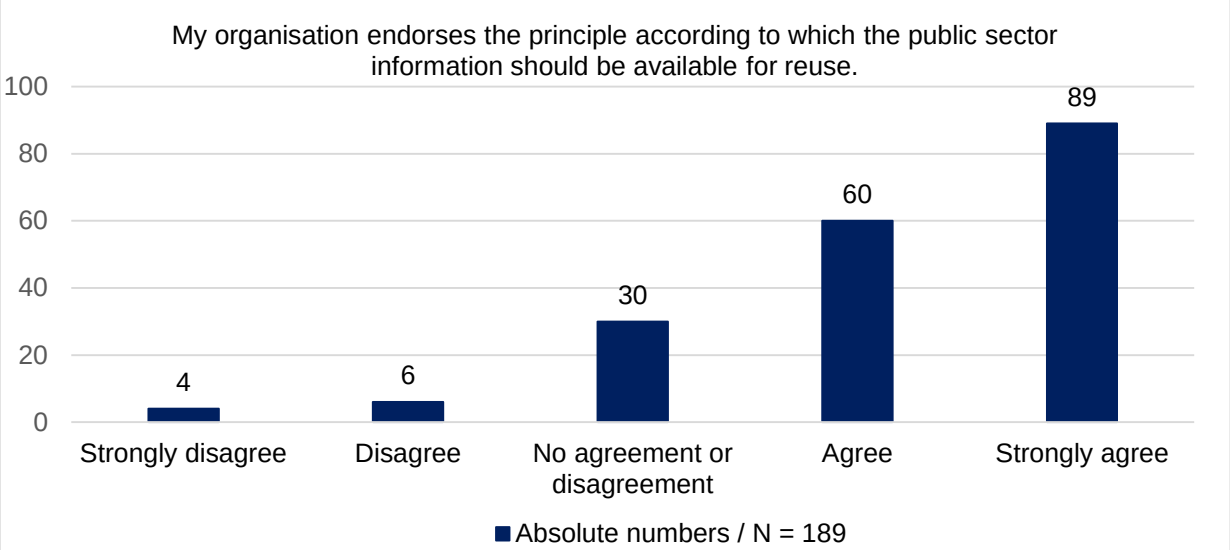
PRINCIPLES, POLICIES AND FRAMEWORKS

For this COBIT enabler two challenges have been identified: Divergences of opinion on Open Data policies and compliance with data protection and security legislations.

DIVERGENCES OF OPINION ON OPEN DATA POLICIES

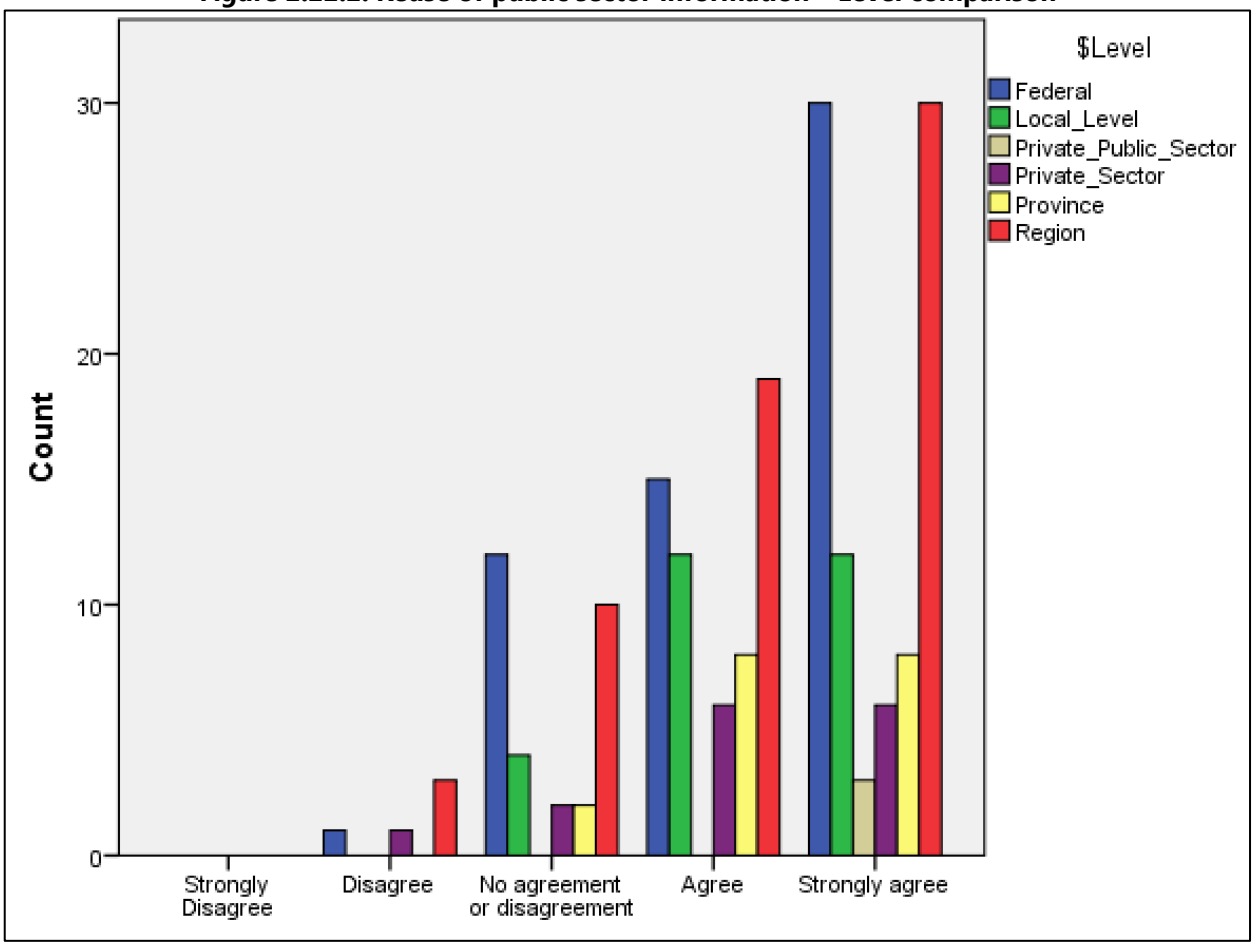
It results from the interviews that the issue regarding Open Data is not the administration's unwillingness to share data, but rather the lack of financial means to do so. This is corroborated by the fact that a wide majority of the questionnaire respondents either strongly agrees or agrees with the statements of the questionnaire according to which public sector information should be (freely) available for re-use. Moreover, there are no major discrepancies between levels on this topic (see Figures 2.22.1-2 and 2.23.1-2 below).

Figure 2.22.1: Reuse of public sector information



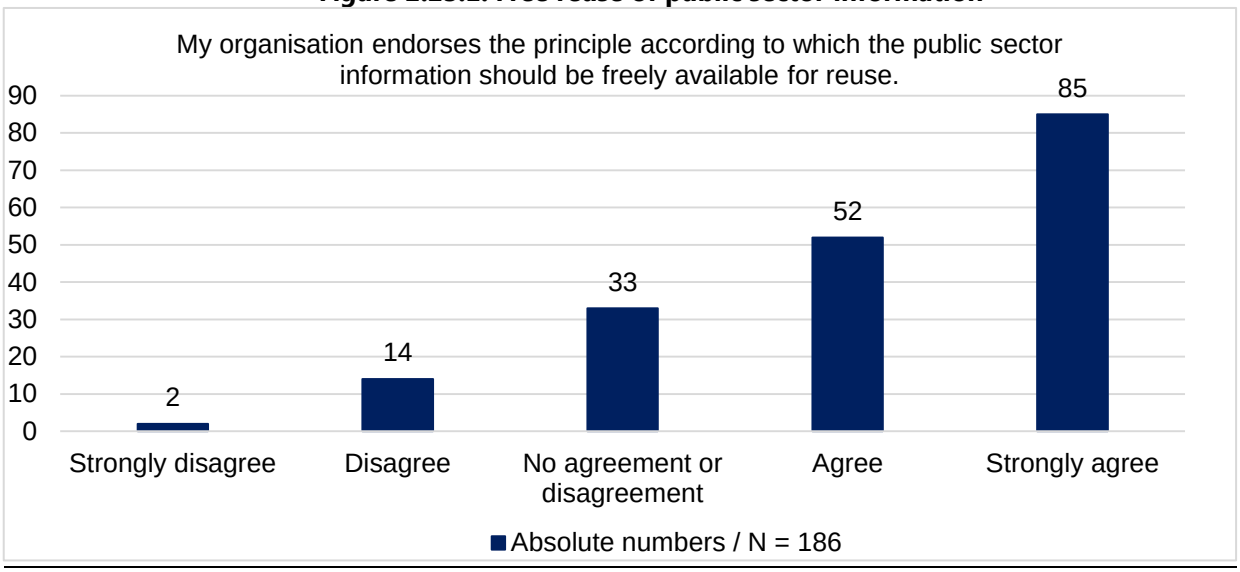
Source: FLEXPUB (2017)

Figure 2.22.2: Reuse of public sector information – Level comparison



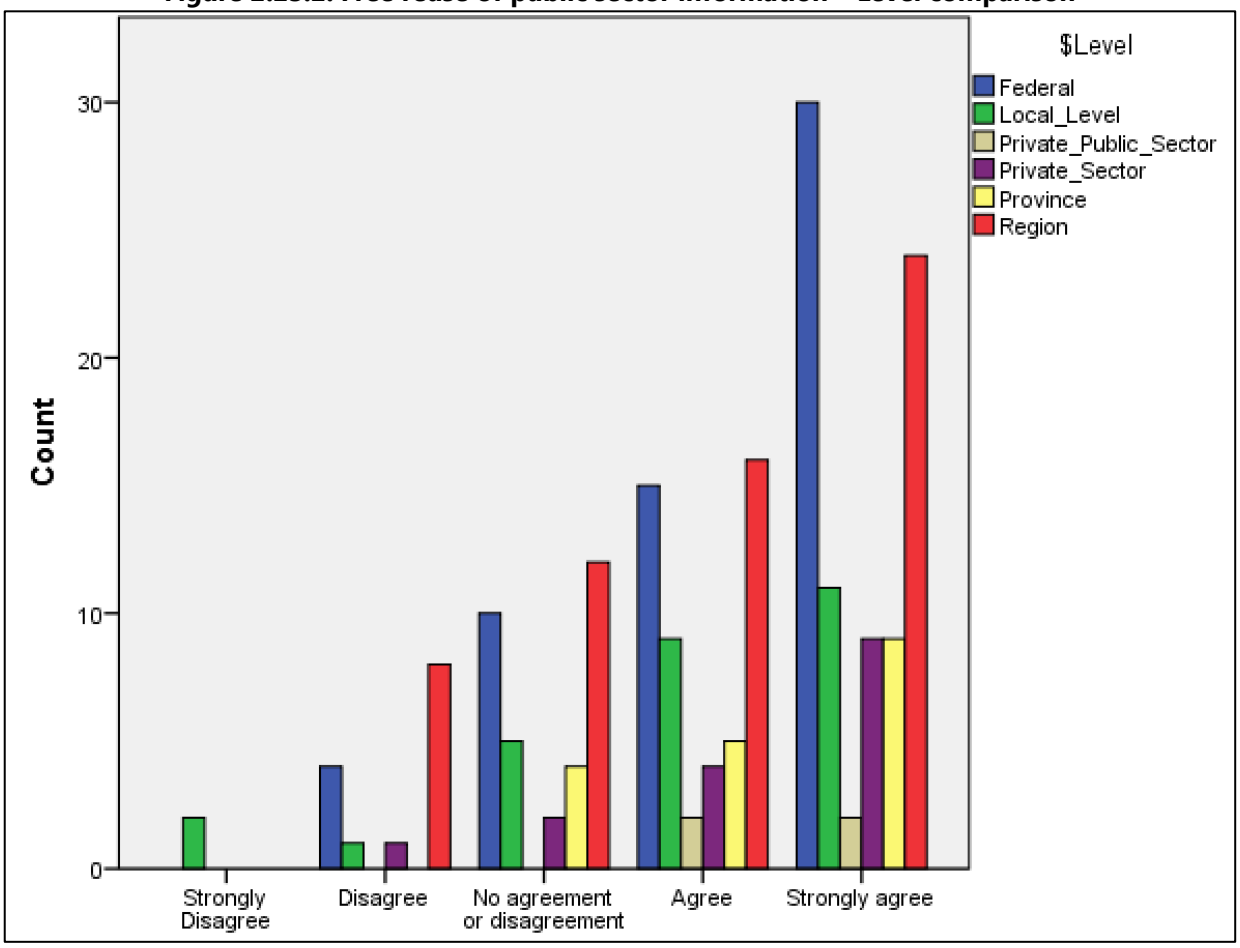
Source: FLEXPUB (2017)

Figure 2.23.1: Free reuse of public sector information



Source: FLEXPUB (2017)

Figure 2.23.2: Free reuse of public sector information – Level comparison



Source: FLEXPUB (2017)

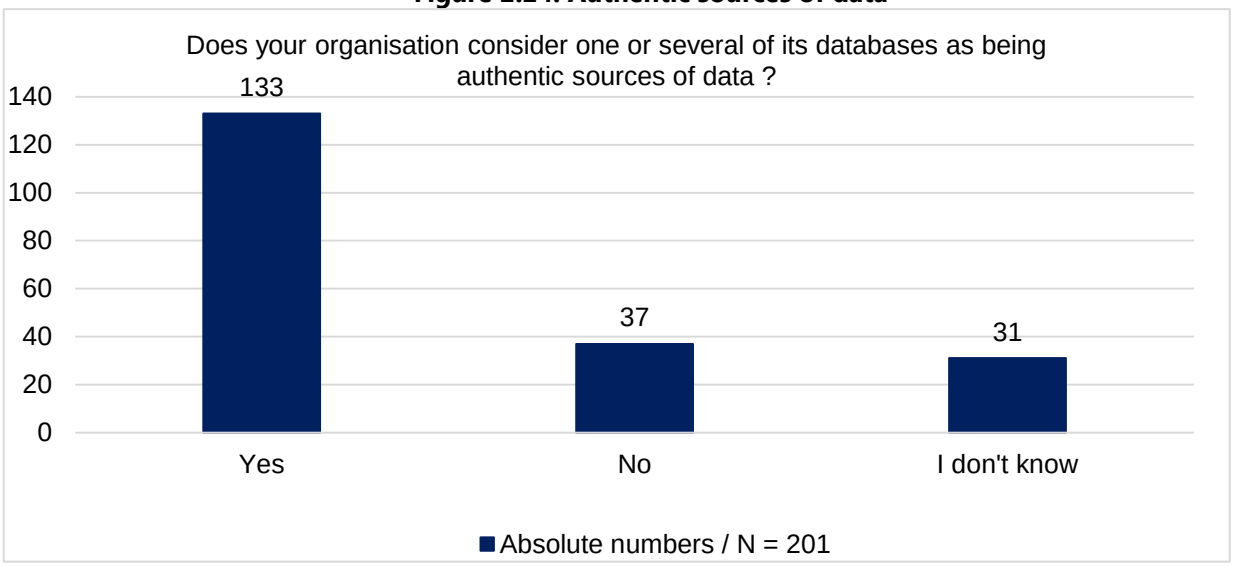
The financial implications of the implementation of a sound and comprehensive Open Data environment are indeed non-negligeable. For some organisations, it would be devastating to open-up their data freely as they currently rely on the sale of such data to fund themselves (as their functioning is not 100% financed by tax

collection). However, this fear should not be exacerbated, as the PSI Directive[7], which provides that public sector information "*shall be re-usable for commercial or non-commercial purposes*" (Art.3), specifies that the principle of the limitation of the fee, that can be asked by the administration to the re-user, to the marginal costs incurred for the reproduction, provision and dissemination, does not apply when the public sector body concerned is required to generate sufficient revenue to cover a substantial part of the costs relating to their collection, production, reproduction and dissemination (Art. 6.2.b.). Indeed, in such a case, the public administrations can claim a reasonable return on investment for the sharing (Art. 6.2.c.).

Moreover, there is a need for a sustainable funding in order to ensure the quality, the continuity and the maintenance of this data, once it has been opened, which is often under-estimated by the political actors. This can be linked to the fear of the administrations to be potentially held liable in case of an issue with data that they would have shared.

Nevertheless, some interviewed federal respondents made clear that making all location-based data 'Open' and compensating the responsible organisation for the loss in income, would only have a very small yearly impact on the overall federal budget, and that political support is difficult to find even though.

Figure 2.24: Authentic sources of data



Source: FLEXPUB (2017)

It should also be pointed out, regarding Open Data, that a wide majority of the questionnaire respondents considers one or several of their datasets as authentic sources of data. The results are similar at the federal and regional level. Finally, this challenge outlines the importance of taking into account the impact of the INSPIRE and PSI Directive (re-use of public sector information). Regarding the PSI Directive, it should be underlined that its goal is not so much to increase public sector transparency, as it is to create better conditions for the internal market.

COMPLIANCE WITH DATA PROTECTION AND SECURITY RULES

This challenge focuses on the fact that the administrations will have to adapt to the rules contained in the new EU General Data Protection Regulation[8] (GDPR) that will be applicable as of May 2018. This is seen as a major novelty for the administrations, who seem very anxious about the effect of this new Regulation on their work

[7] Directive 2013/37/EU of the European Parliament and of the Council of 26 June 2013 amending Directive 2003/98/EC on the re-use of public sector information.

[8] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

and especially about the severe sanctions provided for in case of violation.

This fear should not be exacerbated as this Regulation is, to a large extent, similar to Directive 95/46 that it will replace. This Directive was transposed in the Belgian law of 8 December 1992 on the protection of privacy with regard to the processing of personal data, which will need to be revised as well. Indeed, a heart of the principles, obligations and rights of the data subjects contained in the Regulation already existed in the Directive. The main novelty for the administrations is that the system of data protection will shift from an obligation of prior notifications to the Data Protection Authority to an obligation of accountability, record keeping and of privacy by design / by default processing. They will also have to appoint a Data Protection Officer (DPO). They will however, not be affected by the new "Data portability right".

From a security point of view, and similarly to what was already required by the Directive, the administrations must implement proportionate technical and organisational security measures.

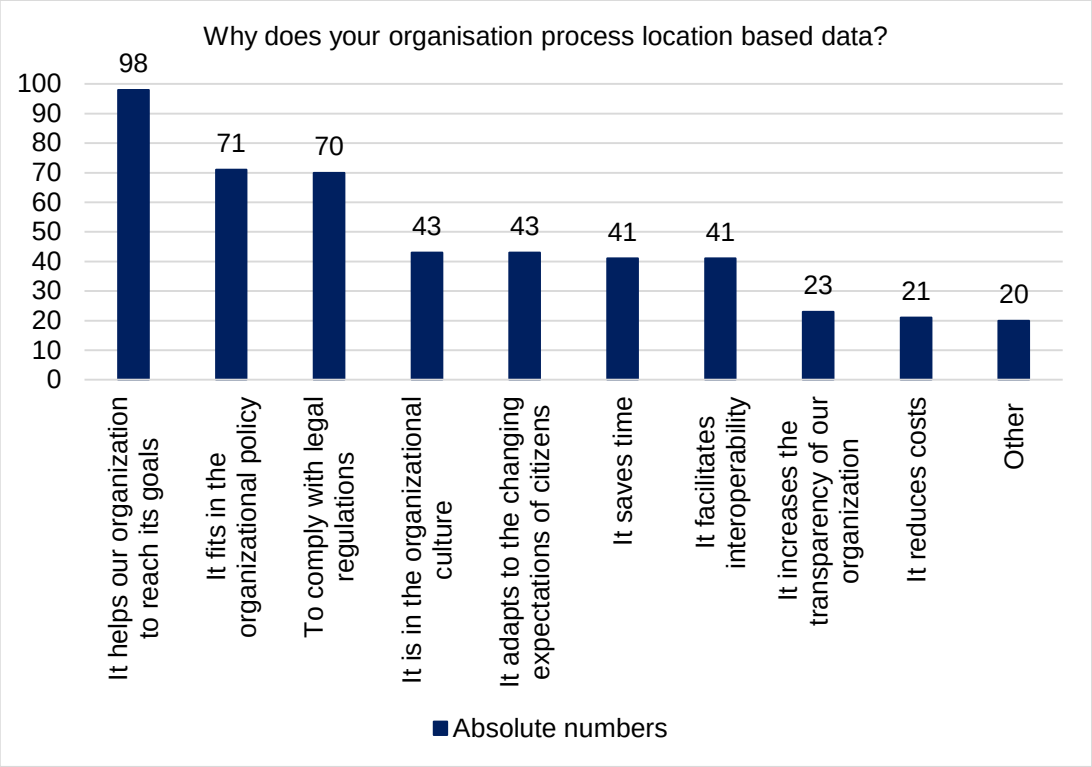
LOCATION-BASED DATA

The previous sections related to e-services in general, but the research project focuses in first instance on location-based data, as it underpins many governmental processes and services.[9] Although "location-based data" does not appear as a separate enabler in the COBIT framework, the researchers therefore felt the necessity to include it as a separate enabler.

The researchers first wanted to understand why location based data is processed by the organisations of the respondent (see Figure 2.25). A very important finding is that quasi-all respondents (98%) stated that location-based data helps to reach the goals of their organisation, thereby underlining the omnipresent role that location plays in governmental processes and services. About 70% of the respondents said that they process location-based data because it fits in the organisational policy, or that they do so to comply with legal regulations. Only 40% of the respondents answered that it is because of the organisational culture and that it facilitates interoperability. Especially the latter is surprising, regarding the omnipresent uptake of location-based data throughout the government. Indeed, one could suggest that location-based data could more intensively facilitate interoperability. Nevertheless, 40% of the respondents answered that they use location-based data in order to adapt to the changing expectations of citizens, which could be an indication of the pivotal role location-based data could play in addressing those changing expectations. Only about 20% process location-based data to increase transparency of the organisation or to reduce costs. With a general tendency for more governmental transparency and cost reduction these percentages might be a sign of under exploitation.

[9] Nevertheless, it should be underlined that the researchers focused several times on the importance of geospatial data in the previous enablers.

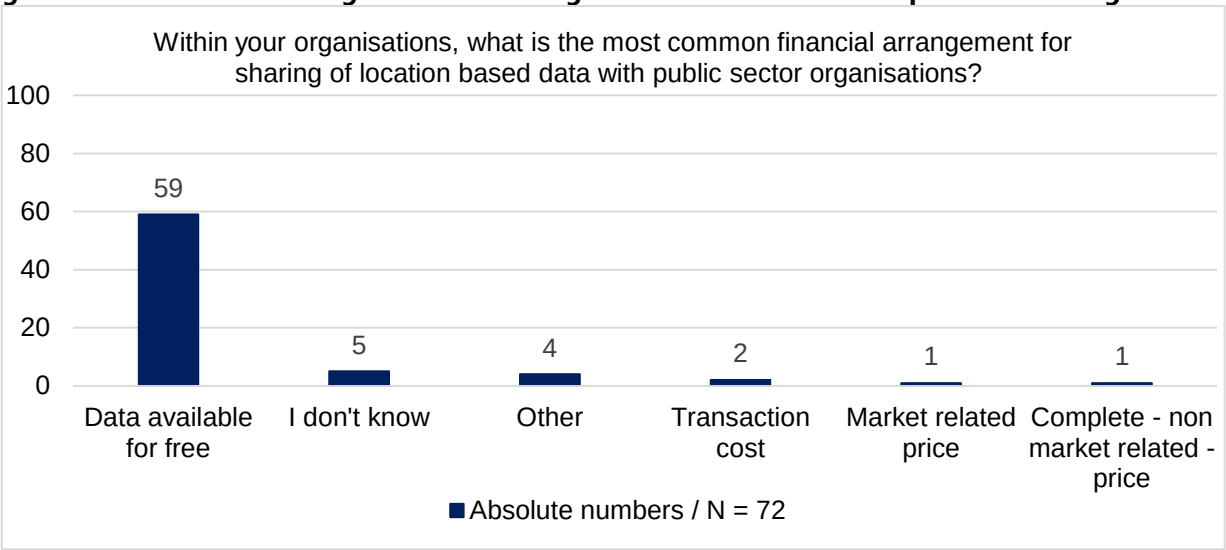
Figure 2.25: Processing of location based data



Source: FLEXPUB (2017)

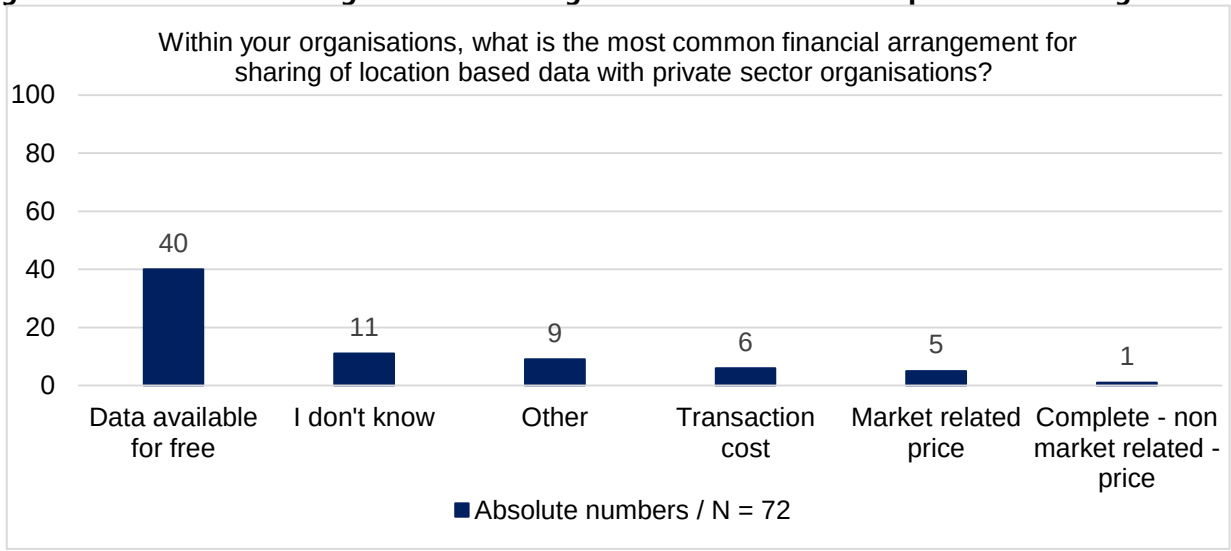
Secondly, the researchers were interested in knowing more about the financial arrangements of the public sector organisations for sharing their location-based data, both with the public sector and private sector organisations (see Figures 2.26.1-2). The expectation was that the pubic sector would apply different regimes for the public and the private sector. Surprisingly however, the financial arrangement for both sector seems to be rather similar. Although the limited number of respondents should be taken into account as well as the rather negative position of some federal organisations towards the notion of "free open data", it is remarkable to see that most respondents indicated that the location-based data of their organisation is available for free. Although the numbers are more convincing for public sector organisations (59 out of 72 respondents) than for private sector organisations (40 out of 72 respondents), there is a majority that indicated that the data is available for free. It should be noted that in both groups, a small but still significant group of respondents does not know the policy of the organisation (5 out of 72 respondents for the public sector organisations) and (11 out of 72 respondents for the private sector organisations).

Figure 2.26.1: Financial arrangement for sharing location based-data with public sector organisations



Source: FLEXPUB (2017)

Figure 2.26.2: Financial arrangement for sharing location based-data with private sector organisations

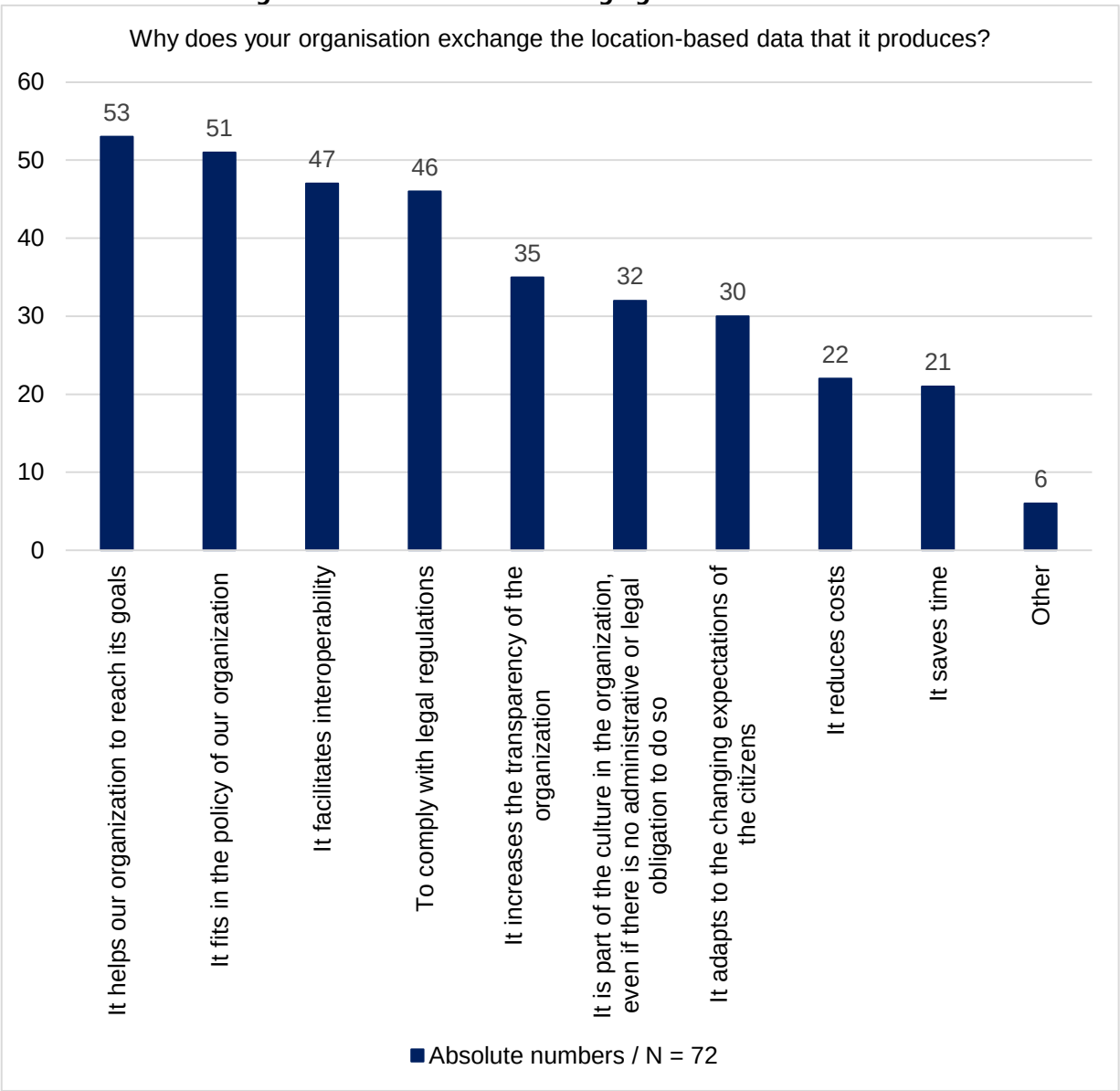


Source: FLEXPUB (2017)

The researchers were also interested to know more about the reasons why the location-based data that they produce is exchanged, as it might help to better understand the current exchange of location-based data between the different organisations. About half of the respondents answered that it helps the organisation to reach its goals, because it fits in the policy of the organisation, it facilitates interoperability and helps to comply with legal regulations. About one third of the respondents replied that it increases the transparency of the organisation, it is part of the culture of the organisation and that it helps to adapt to the changing needs of the citizens. It means that the sharing of location-based data *between* organisations is less often occurring than the processing of location-based data *within* an organisation for the aforementioned reasons. In order to improve transparency, the adaptation to the changing needs of the citizens, and the interoperability of the (federal) government as a whole, one should therefore address the underexplored collaboration of organisations and the identified silo-structure. A high number of significant correlations could be found between the different answers, but the correlations were always weak and below the 0,5 level. Only one correlation was significant and just above the 0,5 level: the answers "It inceases the transparency of the organisation" and "It adapts to the changing expectations of the citizens" correlate significantly at a 0,531 level. This should come as no surprise as transparency is indeed more and more seen as an expectation of the citizens. At the same time, it should come as no surprise that both answers score rather low (both below 50% - respectively 35 out of 72 respondents

and 30 out of 72 respondents). Exchanging location-based data does indeed not lead automatically to more transparency. This is similar to the notion of open data. More open data does not by definition lead to more transparency, as it is often incomprehensible for citizens to understand the data.

Figure 2.27: Reasons for exchanging location-based data



Source: FLEXPUB (2017)

The final element linked to location-based data are the different data-type diagrams. In the online survey, respondents were asked to indicate what type of data they currently use, produce or need but do not possess. A list of 20 types of spatial data listed by the International Standardization Organisation (ISO19115) were included in the survey (see Table 2.2).

Table 2.2: Spatial data types

Type of data	Description and examples
Farming	Rearing of animals and/or cultivation of plants. Ex: agriculture, plantations, livestock etc.
Biota	Flora and/or fauna in natural environment. Ex: wildlife, vegetation, habitat.
Boundaries	Legal land descriptions. Ex: political and administrative boundaries.
Climatology/Meteorology	Processes and phenomena of the atmosphere. Ex: weather, climate, atmospheric conditions.
Economy	Economic activities, conditions and employment. Ex: commerce, industry, tourism, exploitation of resources.
Elevation	Height above or below sea level. Ex: altitude, bathymetry.
Environment	Environmental resources, protection and conservation. Ex: pollution, waste storage and treatment, nature reserves.
Geoscientific Information	Information pertaining to earth sciences. Ex: geophysics, geology, earthquakes.
Health	Health, health services, human ecology, and safety. Ex: disease and illness, hygiene, health services.
Base Maps Earth Cover	Base Maps Ex: land cover, topographic maps.
Earth Imagery	Images of the Earth. Ex: satellite imagery, aerial photographs, LIDAR.
Intelligence Military	Military bases, structures, activities. Ex: military buildings and transportation.
Inland Waters	Inland water features, drainage systems and their characteristics. Ex: rivers, water utilization plans, dams, floods.
Location	Positional information and services. Ex: addresses, geodetic networks, control points, postal zones and services, place names.
Oceans	Features and characteristics of saltwater bodies. Ex: tides, coastal information, reefs.
Cadastral Planning	Information used for appropriate actions for future use of the land. Ex: land use maps, zoning maps, cadastral surveys, land ownership.
Society	Characteristics of society and cultures. Ex: archaeology, education, demographic data, recreational areas and activities, crime and justice.
Structure	Man-made construction. Ex: buildings, museums, religious buildings, factories, housing, monuments, shops, towers.
Transportation	Means and aids for conveying persons and/or goods. Ex: roads, airports, tunnels, nautical charts, vessel location, aeronautical charts, railways.
Utilities Communication	Energy, water and waste systems and communications infrastructure and services. Ex: solar and nuclear sources of energy, water distribution, sewage, electricity and gas distribution, telecommunication networks.

Based on those results the researchers built, for each type of data, a diagram modelling the relationships between the different actors. These diagrams contain a lot of interesting results for the organisations themselves but also for the researchers as they show how data is flowing and what organisations have a key role in the

distribution of spatial data.

There are nevertheless a number of constraints that should be taken into account when reading these dataflow diagrams. First of all, it should be noted that although the number of participating organisations was high, not all organisations with spatial data have participated and that some respondents might not be perfectly aware of the data that is used, produced or needed within the overall organisation. Secondly, while an organisation, which sends the data that it produces only to one or a limited number of other organisations, might appear not to be of crucial importance within the distribution of spatial data, it has nothing to do with the importance of the *data* that is flowing around between the different actors. A third factor to be taken into account are the types of data. The researchers opted for a typology of data that is accepted and promoted by the widely accepted International Standardisation Organisation. However, by making this choice, a number of other categorisations could have been excluded, and different organisations might, as a result of this typology, have interpreted the meaning of the type of data in a different way. Nevertheless, in order to limit this effect, the researchers always provided the respondents with a clear description of the type of data and a number of examples (see Table 2.2 above).

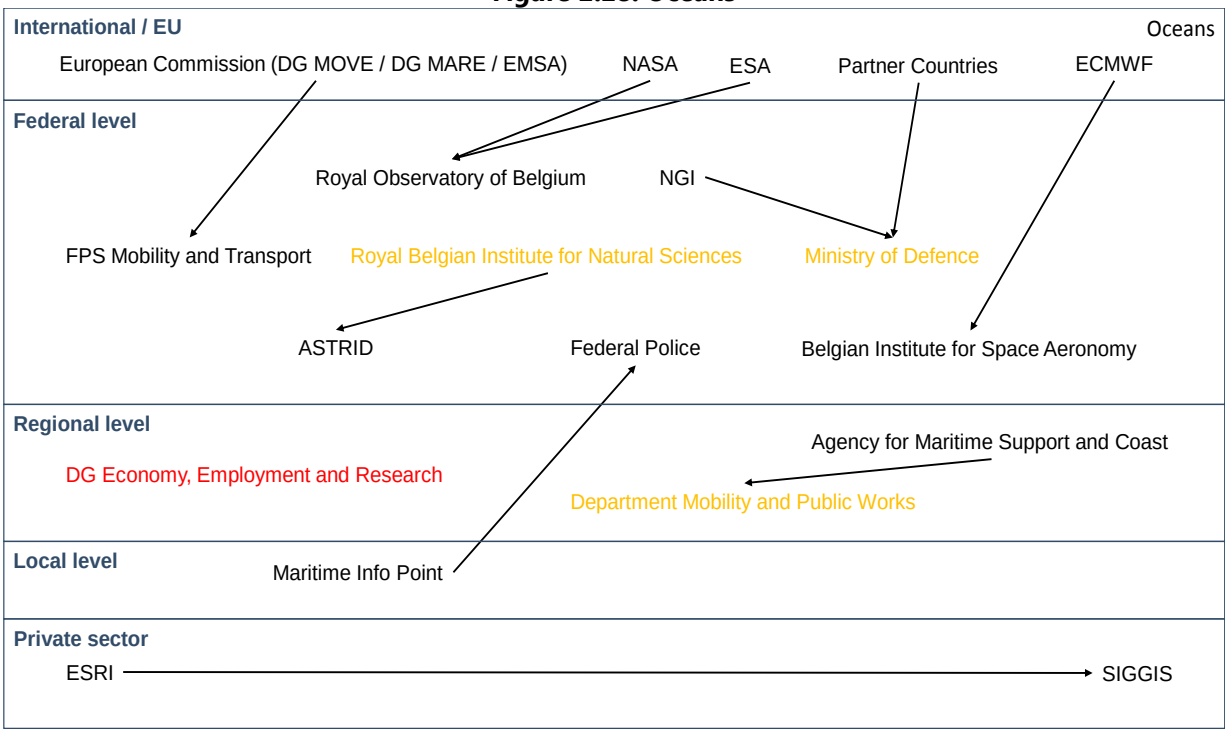
For each type of data a diagram was created – those can be found below (see Figures 2.28 to 2.47). Underneath each diagram, a short description is provided of the main element to take out of the diagram. In order to increase the readability, the researchers decided to structure the diagrams from least complex to most complex. The following legend is applied to all diagrams:

- Black: The organisation indicated that it is only uses the data.
- Yellow: The organisation indidated that it uses and produces the data.
- Red: The organisation indicated that it only produces the data, but didn't indicate that it also uses it.
- Green: The organisation indicated that it needs the data but does not possess it.
- Arrow: "Organisation X sends data to organisation Y".

Five organisational levels were included (in blue). The first one is the international / EU level, as this is considered to be the supranational level. The researchers placed it above the other levels. The private sector was put at the bottom of the diagram, in order not to interfere with the administrative levels. The federal level was put, on purpose, above the regional level as it takes a central position in the FLEXPUB project. This is also the reason why the regional level was not split between the Brussels Capital Region, the Flemish Region and the Walloon Region. Futhermore, the researchers assume that the reader is well-aware of the administrative structure in Belgium and is therefore able to distinguish the different regional organisations from each other. Finally, as the local level is in most cases linked with the regional level, it was decided to place the local level underneath the regional one.

When reading and interpreting those diagrams, it is important to take into account that those are based on the data that was provided to the researchers via the online questionnaire. It is therefore possible that data is missing. This might especially be true for the data about the private sector organisations, as the sample of the baseline measurement does not allow the team to ensure that this outlines the real existing situation. Furthermore, some respondents did not indicate the name of the organization but only the administration. When this was the case, it was opted to use the following names: "Brussels Capital Pubic Administration", "Federal Public Administration", "Flemish Public Administration" and "Walloon Public Administration".

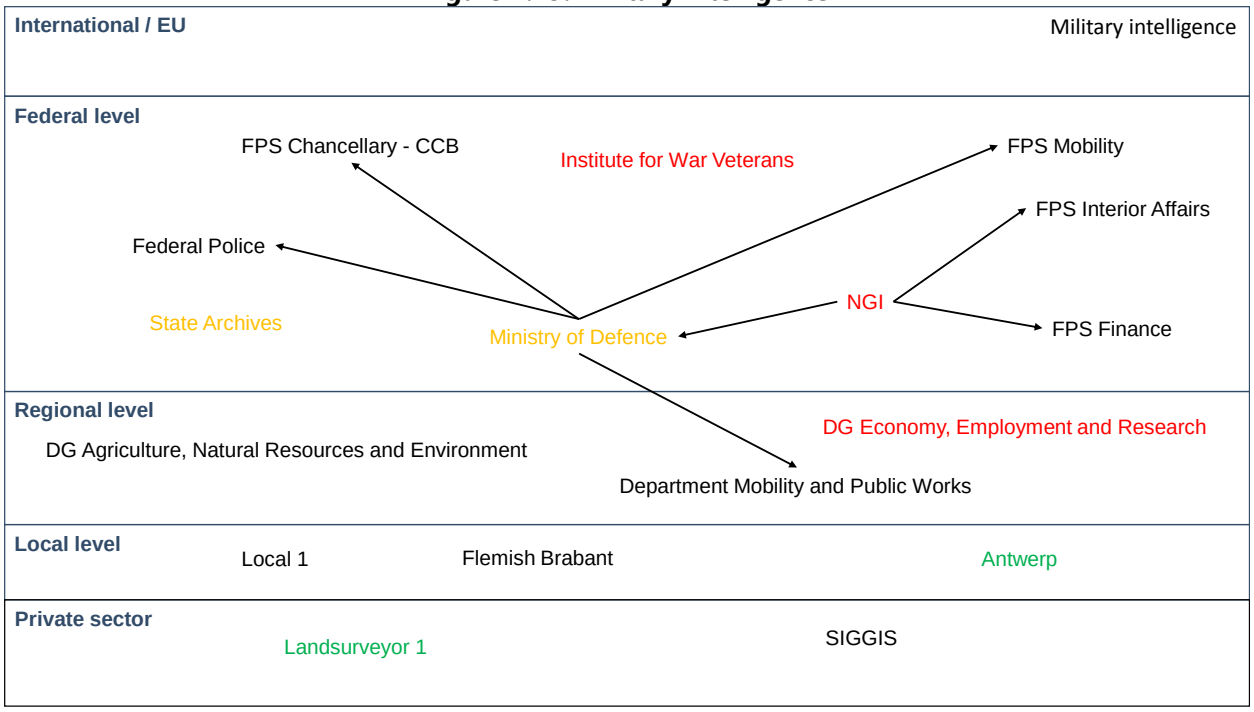
Figure 2.28: Oceans



Source: FLEXPUB (2017)

Concerning the data type "Oceans", a first remarkable observation is the low amount of users and producers of this type of data. There is a clear focus on international data providers such as the European Commission, NASA, ESA and ECMWF. The Ministry of Defence is using data from partner countries – a pattern that is also visible for other types of data. Another remarkable fact is the lack of relationships between the federal and regional level. Indeed, no data is exchanged between the two levels. In contrast to the majority of the other types of data, the organisation "Agency Information Flanders" is not present. The NGI however is present. There is not a single organisation with a key role in the network of "Oceans" data.

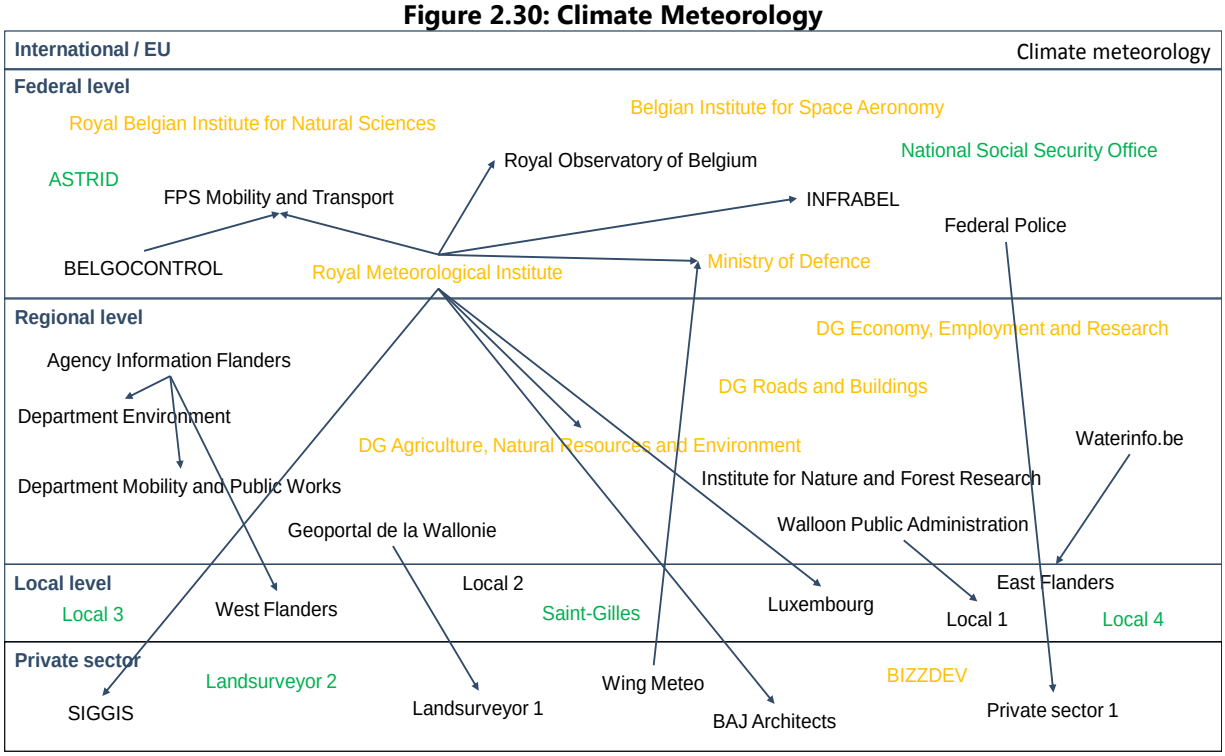
Figure 2.29: Military Intelligence



Source: FLEXPUB (2017)

The second type of data, "Military Intelligence", is characterised by a central position of the Ministry of Defence. Whereas for a number of other data types, such as "Oceans" or "Inland Waters" the Ministry of Defence is receiving data from partner countries, it was not indicated by the respondents that they also receive this type of data from them. Remarkable is the observation that the Ministry of Defence does not receive data from any other organisation, it only sends data to other organisations.

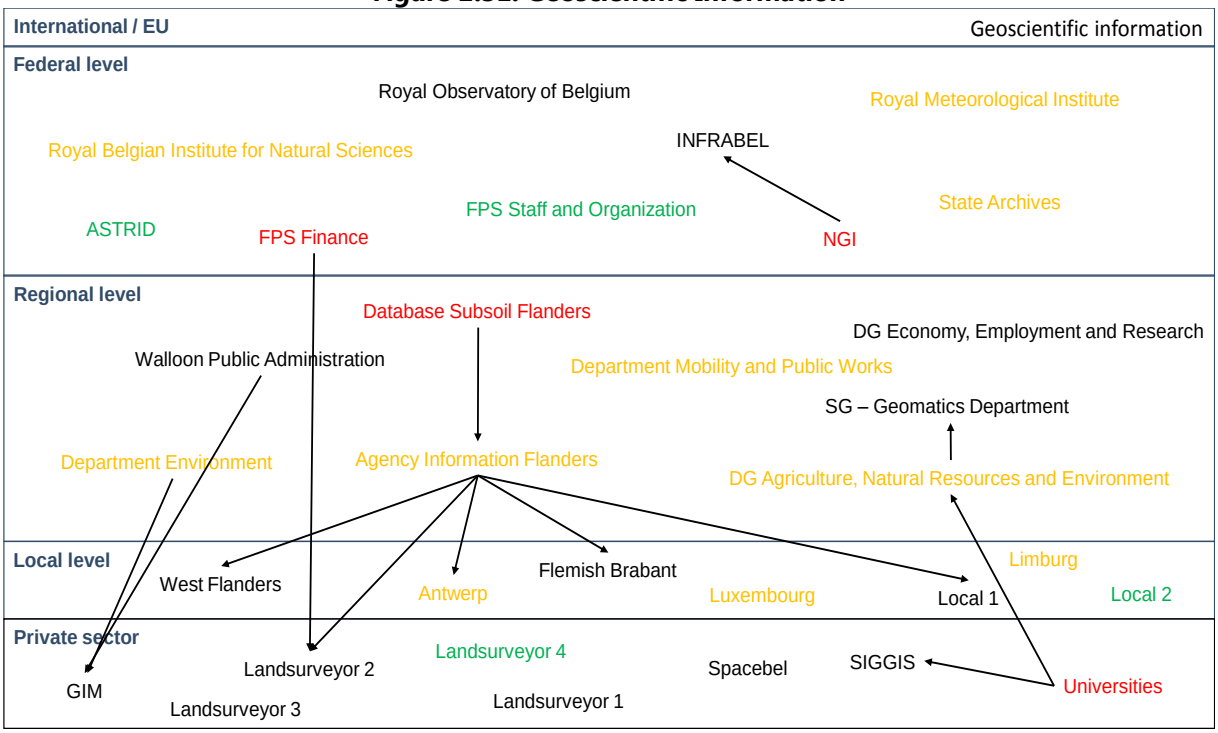
Figure 2.30: Climate Meteorology



Source: FLEXPUB (2017)

Another type of data in which no surprising results were found is "Climate Meteorology". The key institution within this network is the Royal Meteorological Insititute. It produces data, and sends it to institutions at federal, regional and local level as well as to private sector organisations. Although the presence of the National Social Security Office might look suprising, the organisation informed the researchers that there is a strong interest in meteorological data as it helps to detect work fraud.

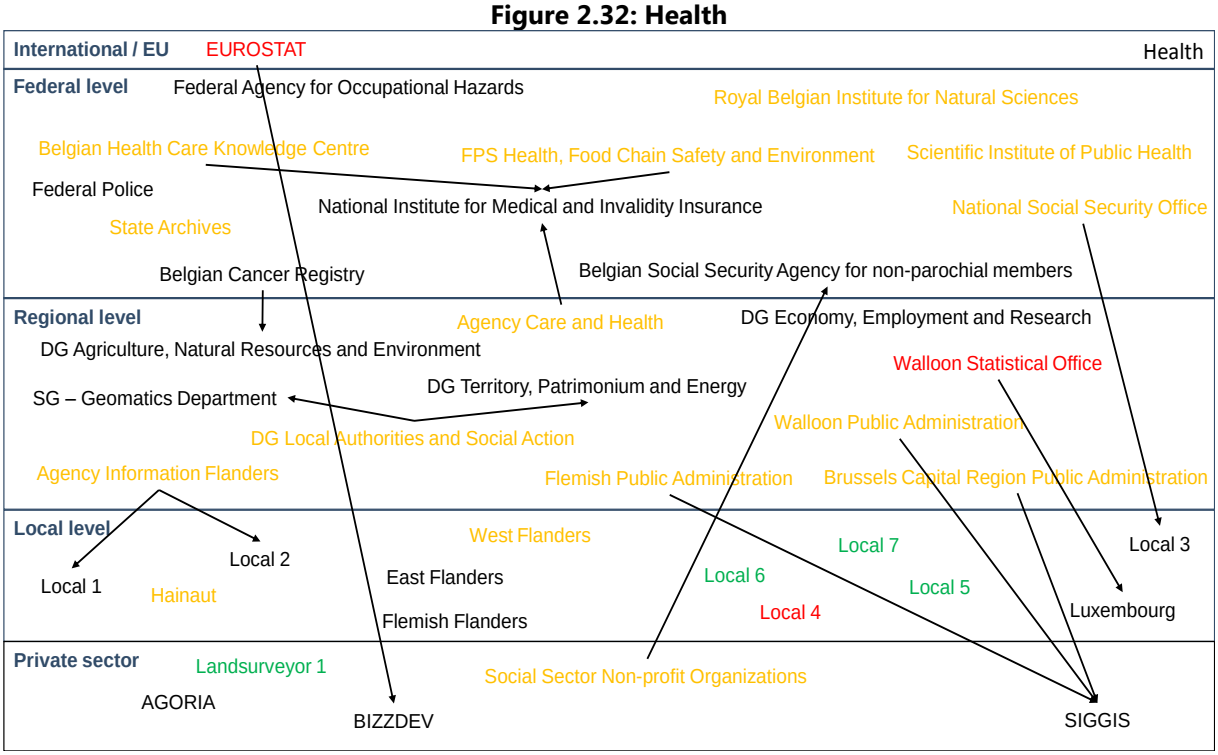
Figure 2.31: Geoscientific Information



Source: FLEXPUB (2017)

A few remarkable observations can be made for this type of data. Firstly, it is clear that the Agency Information Flanders plays a key role in the distribution of this type of data - although only to the local level and private sector. The NGI produces data, but only INFRABEL indicated that it receives that data from the NGI. Furthermore, a connection between the federal and regional level is lacking. From a Walloon perspective, there is close connection to universities producing this type of data. The DG Agriculture, Natural Ressources and Environment receives it from them and sends this type of data also to the SG – Geomatics Department. Finally, it worth noting that four actors, of which two from the federal level, need this type of data.

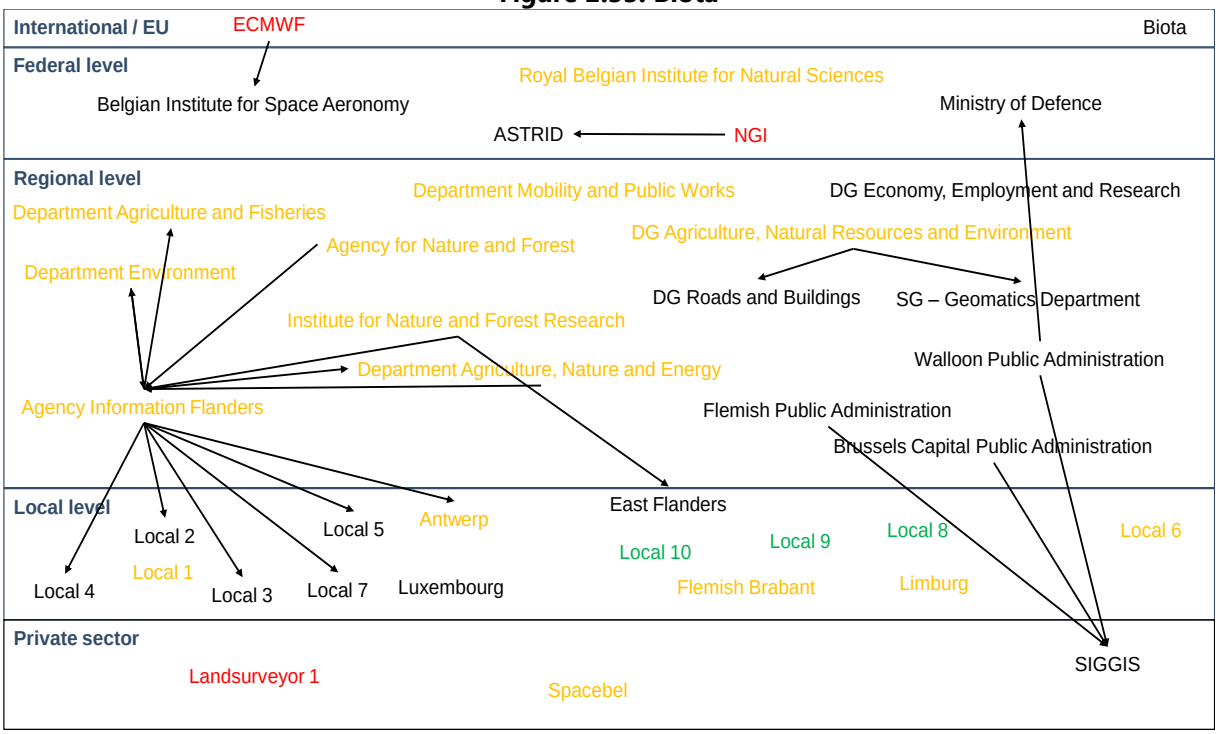
Figure 2.32: Health



Source: FLEXPUB (2017)

The "Health" diagram teaches us that there is not a single organisation with a central role for this type of data. At the federal and regional levels, several organisations indicated that they use and produce this type of data – which is also, but to a lower extent, the case for the local level and private sector. The number of social security organisations is higher for this type of data then in other types – this is in line with the expectations. One of the reasons which might explain the limited focus on "Health" is the fact that it is not always associated with geospatial data. Also, this might have led to a lower response rate of organiations with a policy focus on "Health".

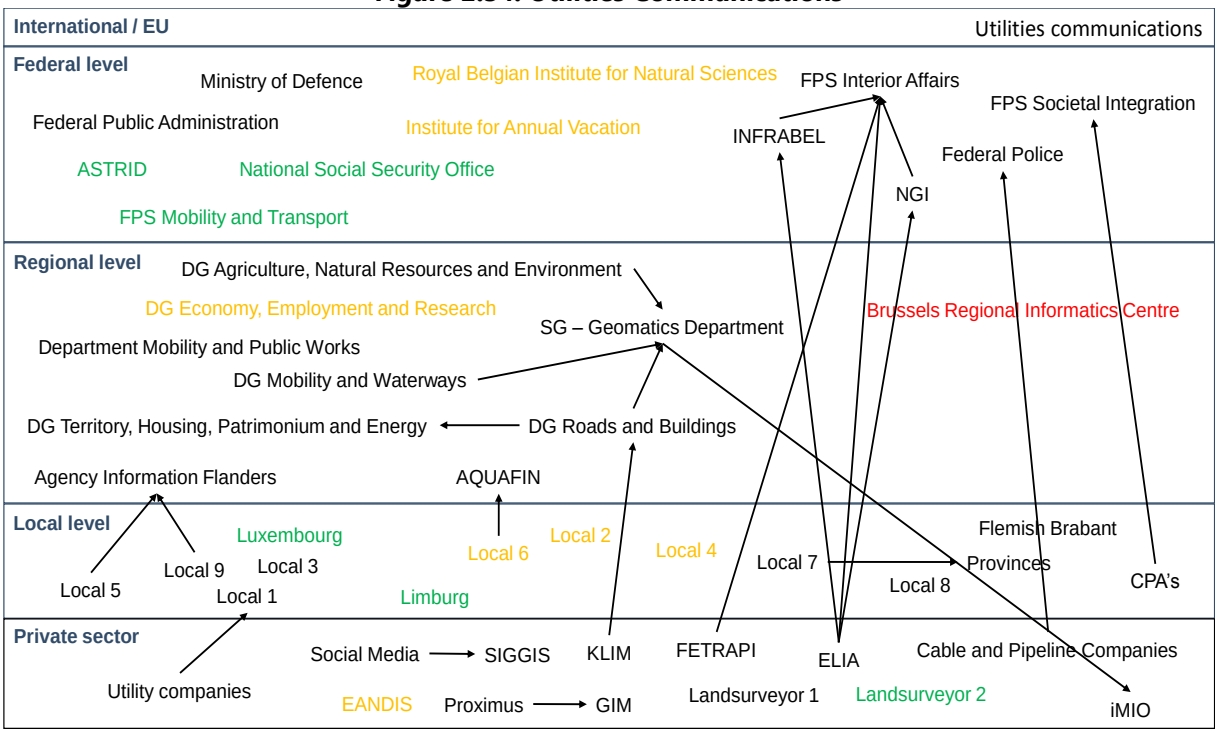
Figure 2.33: Biota



Source: FLEXPUB (2017)

Especially the regional level is involved in the production of this type of data. At the Walloon level, only the DG Agriculture, Natural Resources and Environment, indicated that it produces and uses "Biota". At the Flemish level, the Agency Information Flanders plays a key role: it receives data, produces data itself, and distributes it to other organisations at regional and local level. Another remarkable fact is the lack of relationships between the regional and federal level. Finally, it should be noted that a number of organisations indicated that they receive data from the Walloon, Flemish and Brussels Capital public administration. Unfortunately, this information is not specific enough to connect it to a specific organisation.

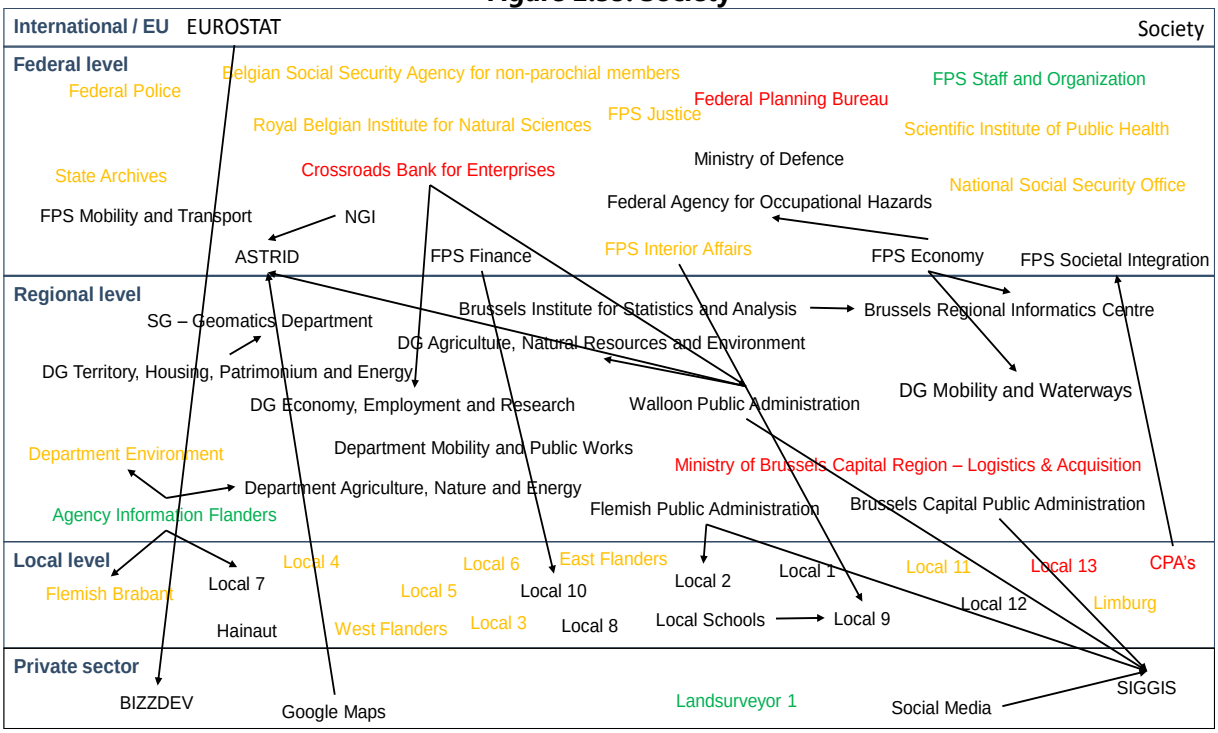
Figure 2.34: Utilities Communications



Source: FLEXPUB (2017)

As with the "Health" data, there is also no central distributor for this type of data, but the data is used and produced at various levels. This is remarkable as there are iniatives at federal and regional level to centralise this data via the so-called 'KLIM' and 'KLIP' initiatives and the related e-services. Please note that 'KLIP' is missing: There was no respondent mentioning this name.

Figure 2.35: Society

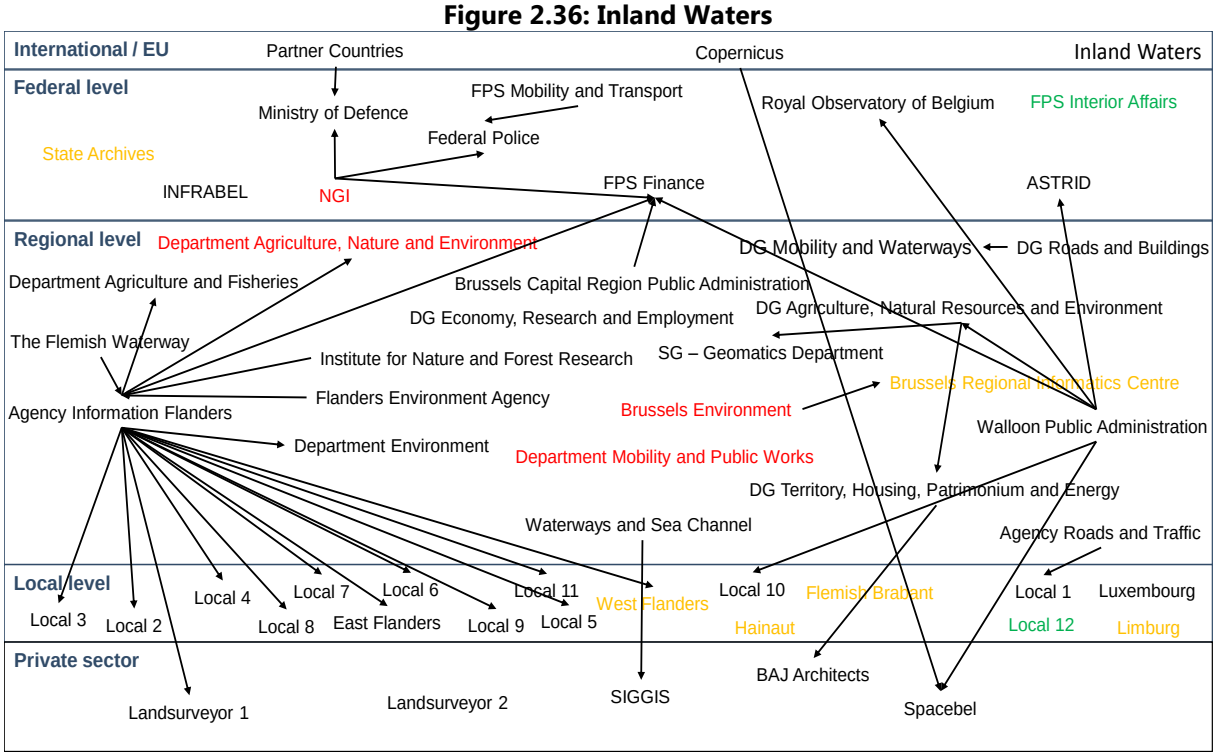


Source: FLEXPUB (2017)

For the "Society" type of data, there is no clear sharing structure. Various organisations, mainly at federal and local level, produce and use the data but a sharing mechanism is lacking. It is worth mentioning that the Agency

Information Flanders indicated that it needs this type of data.

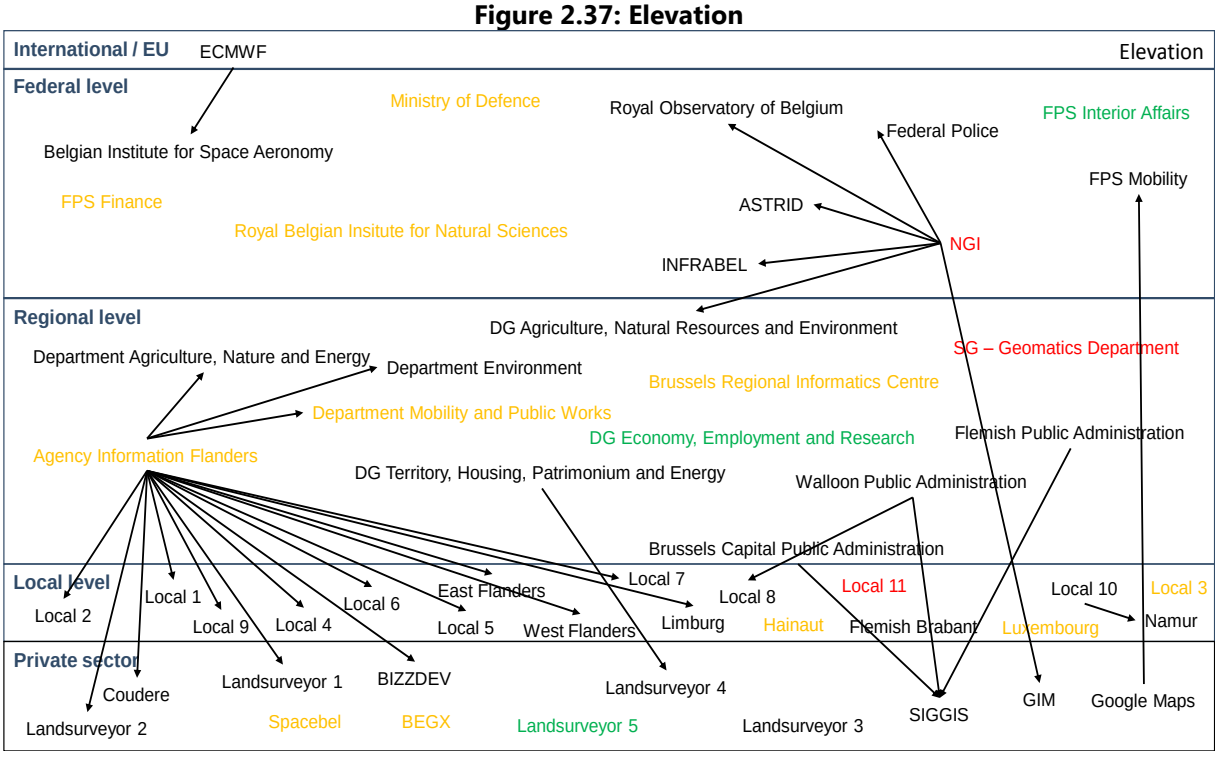
Figure 2.36: Inland Waters



Source: FLEXPUB (2017)

The data type "Inland Waters" shows a rather remarkable situation as there are, both at the federal and Flemish regional level, clear key organisations. At the federal level, there is the NGI – which is also producing data –, and at the Flemish level, there is the Agency Information Flanders which receives and redistributes the data to all levels. A rather specific situation is present in Wallonia, where there is no key actor present and no organisation indicated that it produces the data. There are, however, no connections among the Regions – which is suprising for this type of cross-border geospatial data.

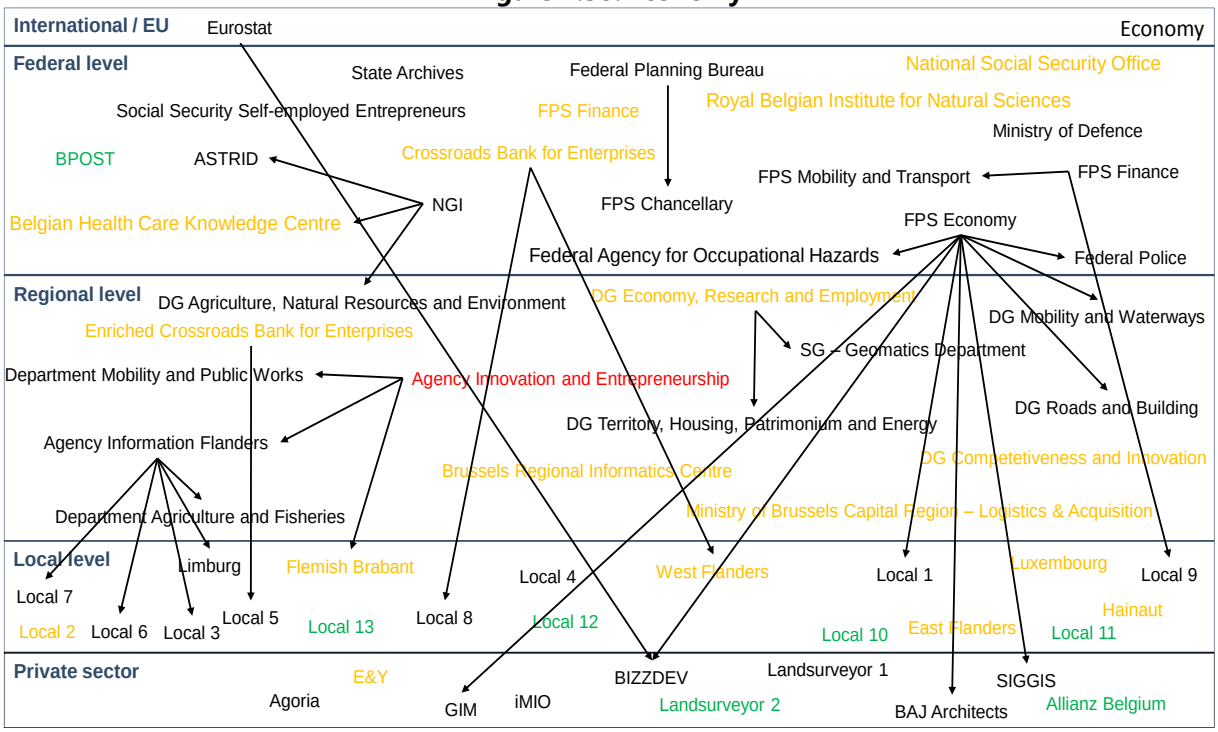
Figure 2.37: Elevation



Source: FLEXPUB (2017)

In contrast to "Health", "Society" or "Utilities Communications", "Elevation" is a more traditional type of data and there are, at federal and regional level, specific key actors. At federal level, the NGI produces data, and sends it to a number of federal organisations and the private sector. At the regional Flemish level, the Agency Information Flanders plays a key role as producer and user. From a Walloon perspective, there is no key organisation that can be distinguished – even though the SG – Geomatics Department produces this type of data. Once again, there are no connections between the federal and regional level.

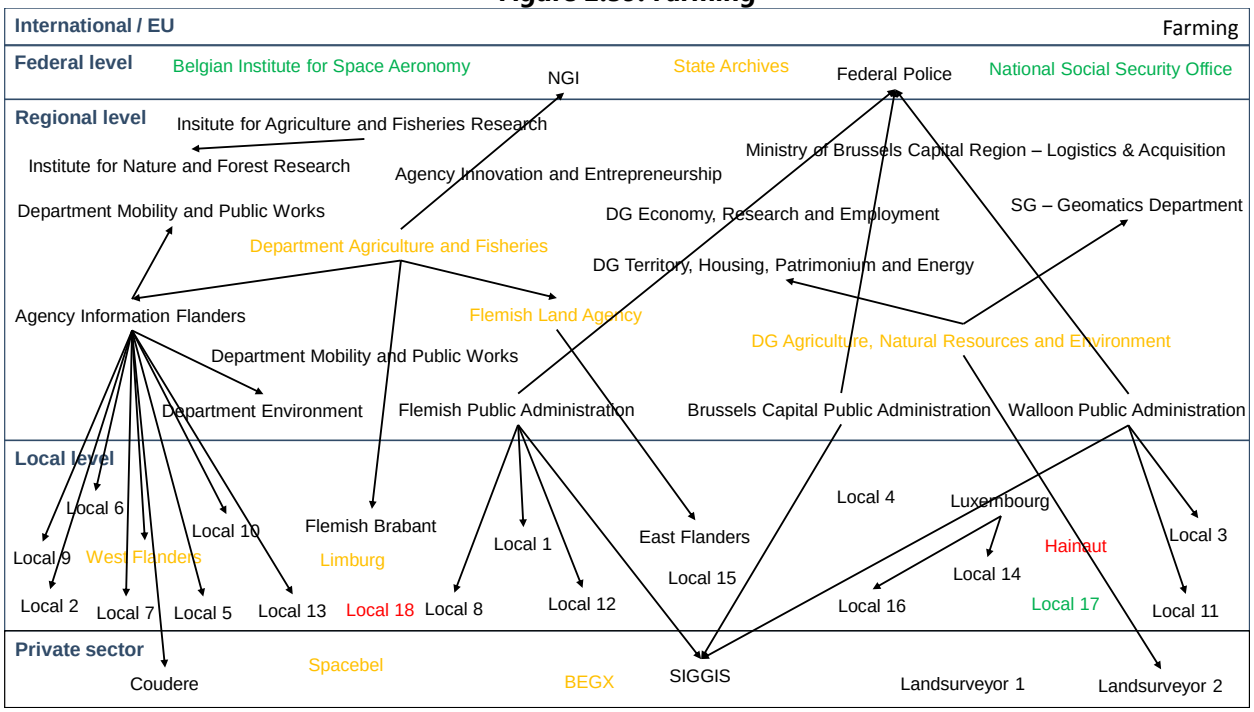
Figure 2.38: Economy



Source: FLEXPUB (2017)

As could be expected for the data type "Economy", the FPS Economy takes a central position in relation to the federal, regional and local level, as well as for the private sector. Remarkable is the lack of relationships between the federal and Flemish regional level. At Flemish level, the Agency Information Flanders receives data from the Agency Innovation and Entrepreneurship and sends it to other organisations.

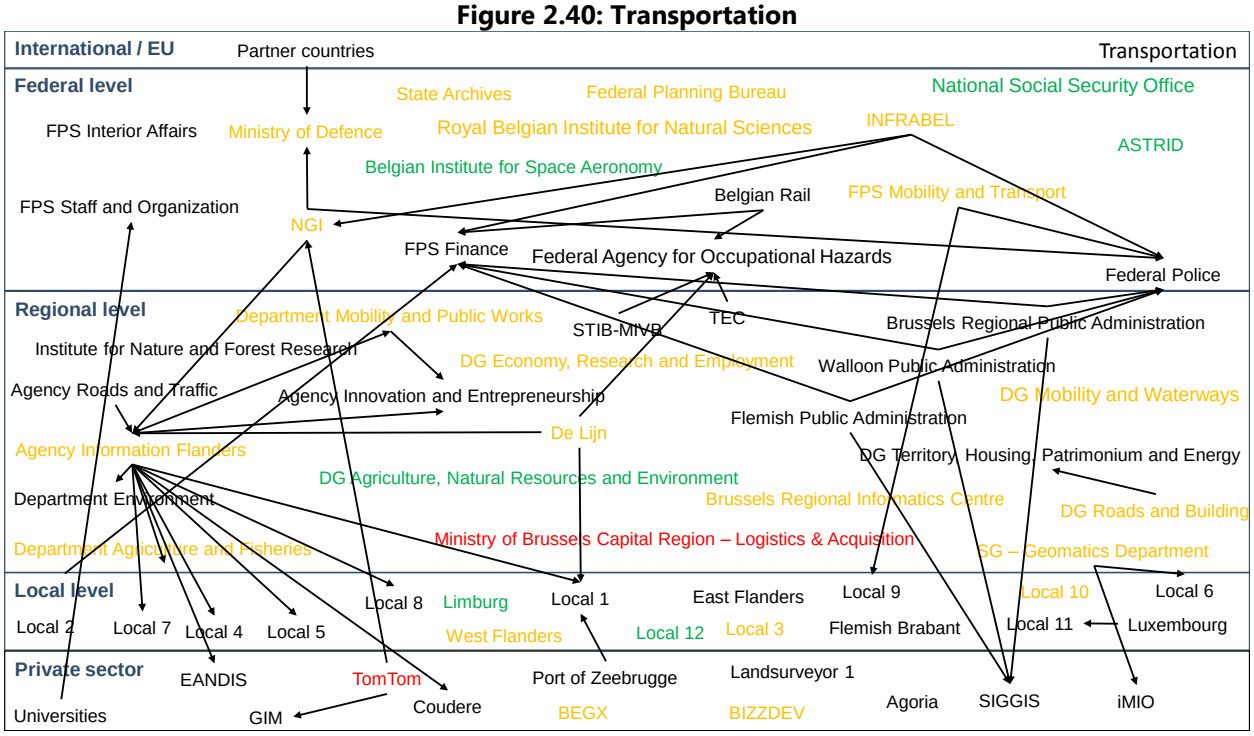
Figure 2.39: Farming



Source: FLEXPUB (2017)

The "Farming" type of data is dominated by the Regions, with only a limited role for the federal level, where two organisations indicated that they receive the data, and two others that they need the data. In the Walloon region, the DG Agriculture, Natural Resources and Environment is dominating – and not the SG – Geomatics Department. This is in contrast with the Flemish side, where the Department Agriculture and Fisheries produces and uses such data, even though the Agency Information Flanders is the main distributor for this kind of data.

Figure 2.40: Transportation

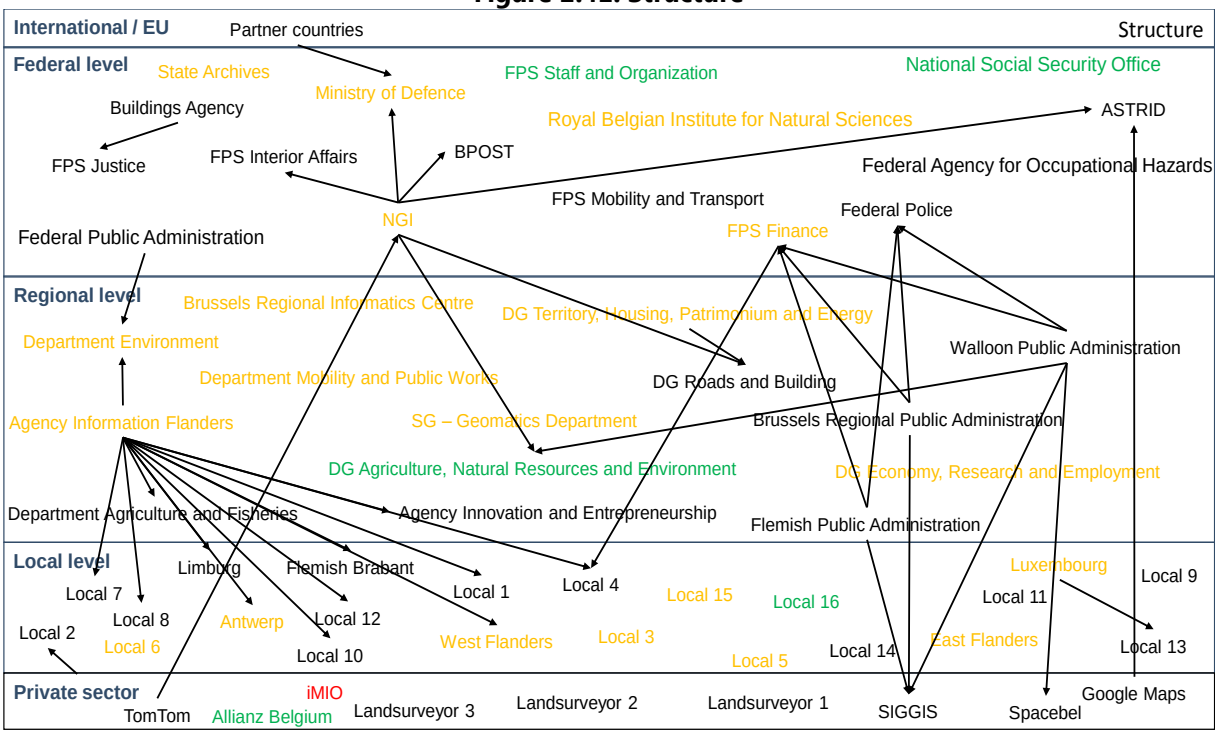


Source: FLEXPUB (2017)

"Transportation" data is characterised by two main features. On one hand, there are numerous organisations that produce and use this type of data, at all levels. On the other hand however, there seems to be a lack of

clear sharing structures. At the federal level, the FPS Mobility and Transport plays – contrary to what was expected – a rather limited role, but at the Flemish level it is again the Agency Information Flanders that dominates the distribution of the data. Wallonia is characterised by an unclear situation.

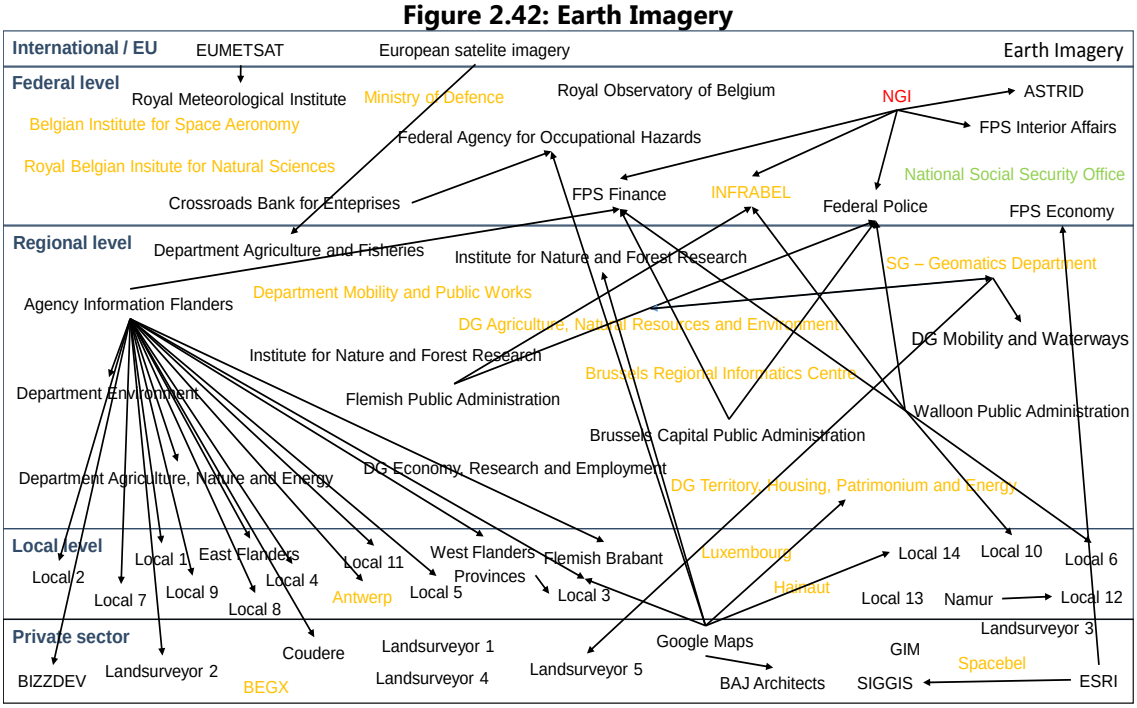
Figure 2.41: Structure



Source: FLEXPUB (2017)

All different groups are represented for this type of data. At the federal level, the NGI produces and distributes the data – also via the private sector. The FPS Finance is mainly a receiver of the data, which is then used for the patrimonial documentation. At the regional level, it is mainly the Agency Information Flanders that plays a key role. It produces and distributes the data. A relationship could only be found between the federal and Walloon administration, and not between the other levels.

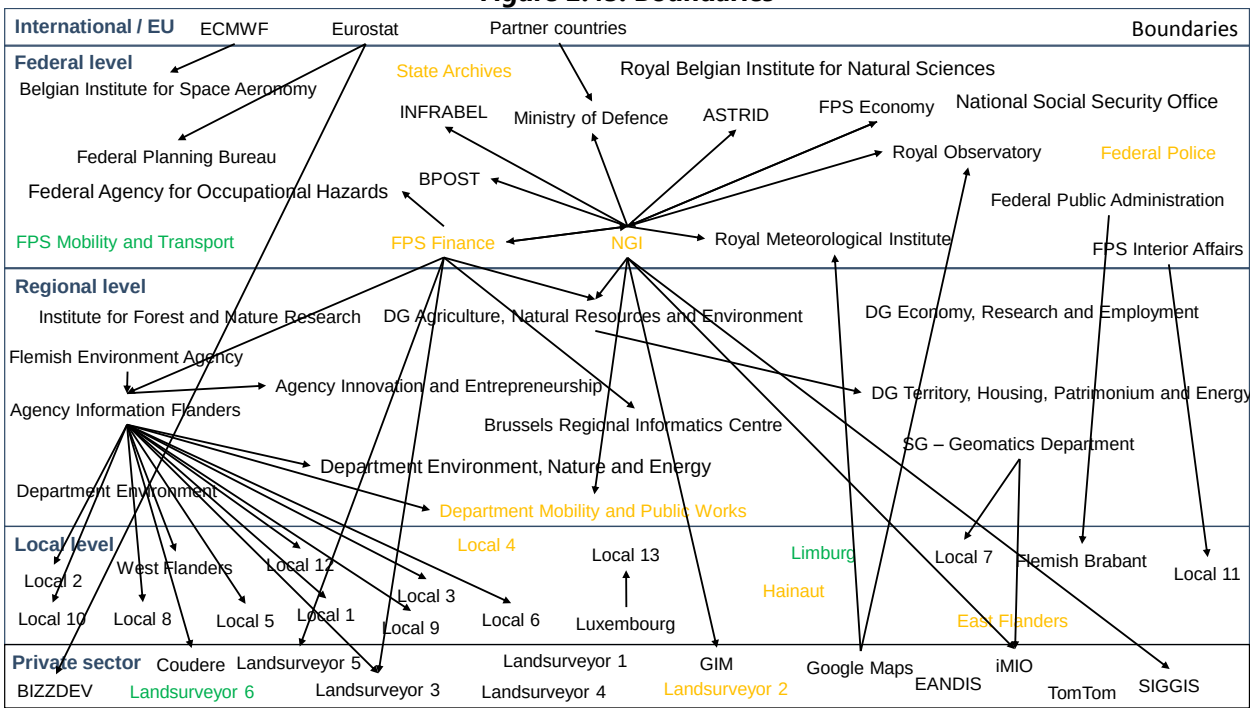
Figure 2.42: Earth Imagery



Source: FLEXPUB (2017)

For the data type "Earth Imagery", the researchers found that the NGI dominates the federal level, even though there are other producing organisations without a connection to the NGI. At the regional level, the Agency Information Flanders dominates the scene once more and distributes data to the regional and local level as well as the private sector. The use of Google Maps remains limited to a few organisations.

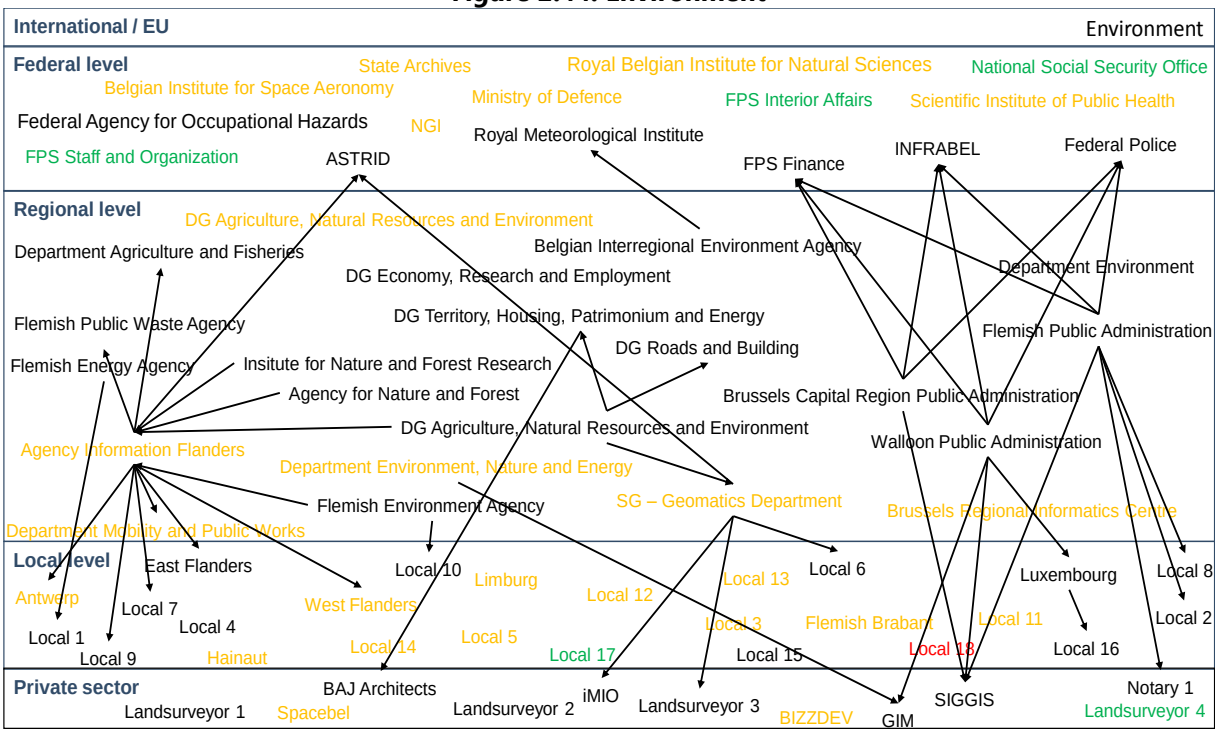
Figure 2.43: Boundaries



Source: FLEXPUB (2017)

A rather specific situation can be observed for this "Boundaries" data. The FPS Finance mainly distributes its data to the regional level and the private sector. The Agency Information Flanders receives this type of data from the FPS Finance and then redistributes it to the regional and local level, as well as the private sector. The NGI produces the data, and it also one of the main distributors. In contrast to the expectations, Google Maps and TomTom data seem to have only a limited impact. The FPS Mobility and Transport needs this type of data.

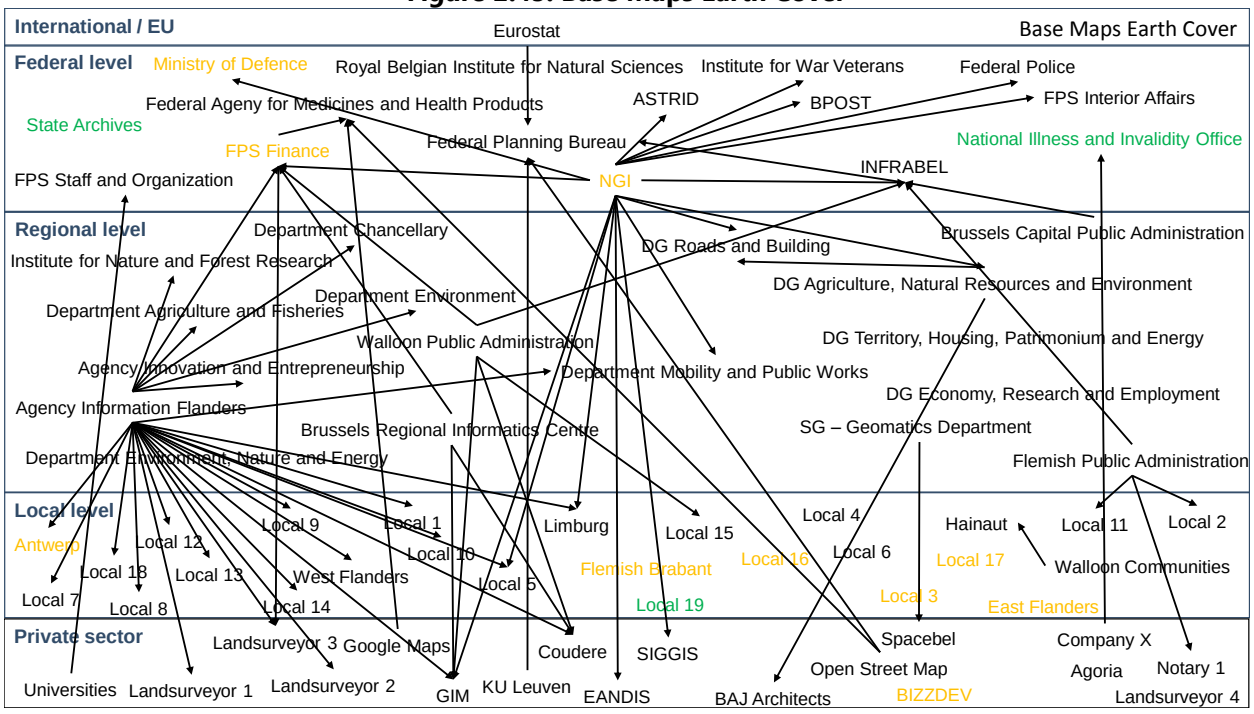
Figure 2.44: Environment



Source: FLEXPUB (2017)

"Environment" data is used and produced by a high number of organisations, with a dominant role of the scientific institutions at the regional and federal levels. The Agency Information Flanders arguably has a central but not prominent role – and a similar situation seems to be present for the DG Agriculture, Natural Resources and Environment.

Figure 2.45: Base Maps Earth Cover

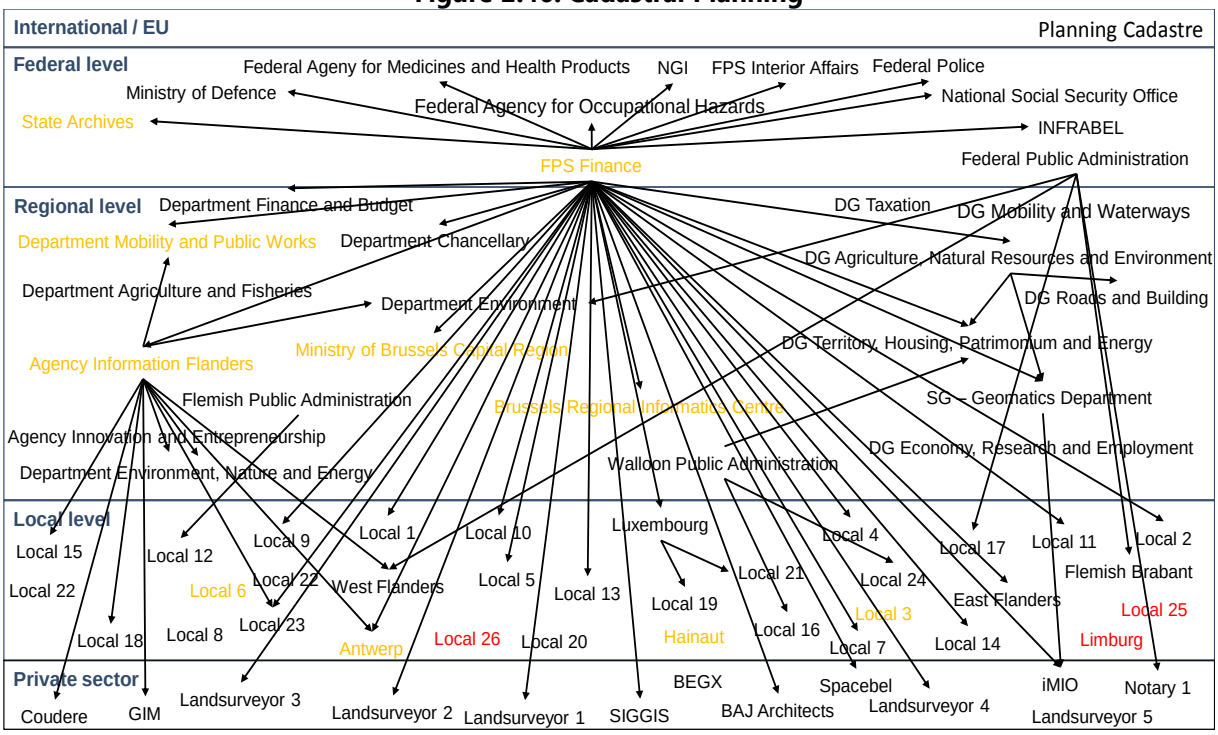


Source: FLEXPUB (2017)

There are two dominating organisations for this type of data. On the one hand, the NGI at the federal level, which produces, uses and distributes its data to other organisations at federal, regional, and local level as well

as to the private sector. On the other hand, the Agency Information Flanders that has a dominant role. Remarkable are the strong connections between the private sector and the federal and regional levels. Finally, it should be mentioned that the amount of organisations using this type of data is high.

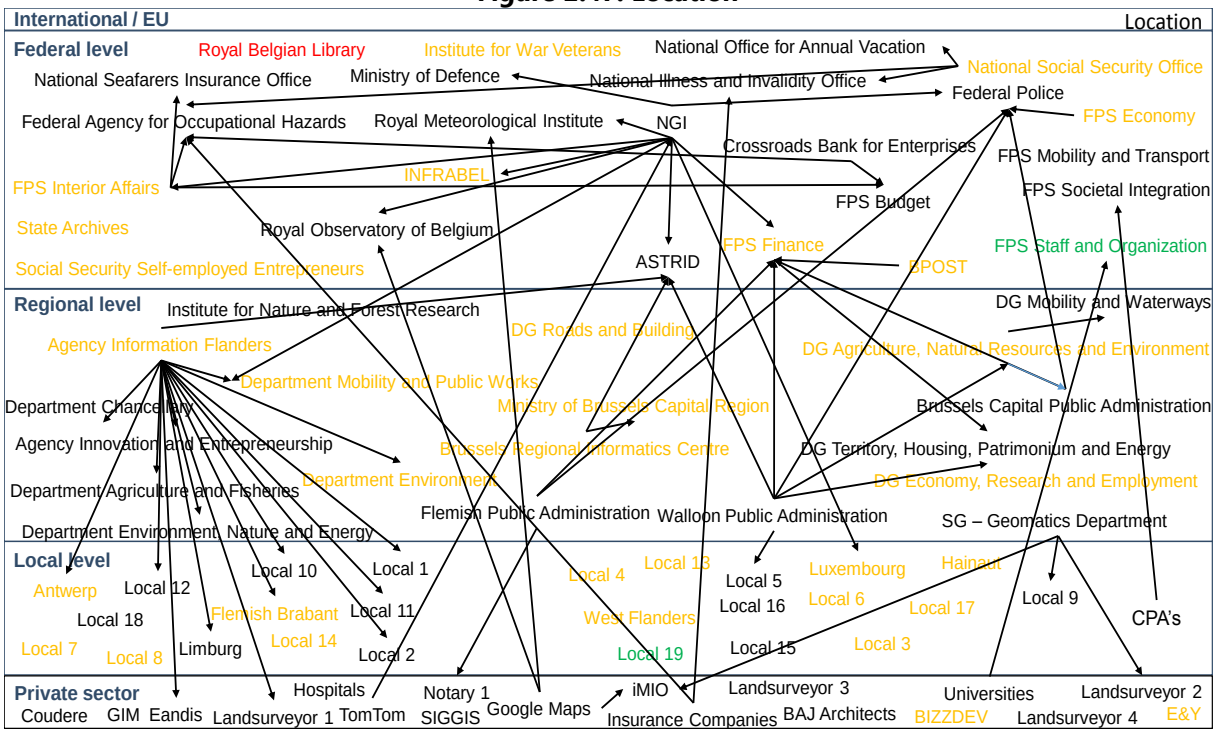
Figure 2.46: Cadastral Planning



Source: FLEXPUB (2017)

The dominating organisation for this type of data is, unsurprisingly, the FPS Finance. It distributes the data to organisations at the federal, regional and local level, as well as to the private sector. The Agency Information Flanders receives the data from the FPS Finance, even if it also produces and redistributes this type of data – the double distribution to the local level is however known to be leading to difficulties for the local communities. This is the only type of data where such a strong domination from a single organisation can be observed.

Figure 2.47: Location



Source: FLEXPUB (2017)

In contrast to the previous type of data, "Location" is not structured around one dominant organisation. The number of users is high, and at all levels there are several producers of this type of data. At the federal level, it could be argued that the NGI has a strong role – but it is not dominating the field. The situation is similar at the regional level. The Agency Information Flanders dominates among the organisations with a link to Flanders, but a similar situation is not present in Wallonia. Finally, a high number of private sector actors are using this type of data.

* * *

Out of the presentation of the above diagrams, a number of conclusions can be drawn. A first element to take out of this analysis is the limited role of the NGI at the federal level. Even if for a number of data types, the NGI plays a dominating role, this is not so for many others. As the NGI presents itself as a geobroker, it was expected that a more prominent position of the organisation would emerge, at least at the federal level, especially concerning the gathering and redistribution of data, even when it does not produce the data itself. Secondly, a similar situation emerges at the Walloon level, where the SG – Geomatics Department was expected to play a dominant role, but seems to have a very limited role in reality. Other organisations of the Walloon administration are much more dominant – an example is the DG Agriculture, Natural Resources and Environment. A third overall conclusion is the strong presence of AIV, which produces, uses, and gathers information to distribute and redistribute it to other organisations at different levels. A fourth conclusion can be drawn on the connections between the different regional and federal administrations. While in an ideal situation, such types of connections should be observed for all types of data, this is only the case for some of the above-mentioned categories. In this regard, it can be observered that there are more connections between the Walloon region and the federal administration, than between the Flemish region and the federal administration.[10] Finally, although the number of organisations of the Brussels Capital administration which replied to the survey was limited, it is striking to see how limited the presence of those Brussels administrations is in all the different

[10] The team would like to emphasise once more that the diagrams are based on the information provided by the respondents. The team is aware of the fact that some of the data might not always be totally in line with the existing lines of sharing information. It would however, from a scientific point of view, not be correct to contact respondents and to point to possible errors in the information they provided to the team.

diagrams.

3. NEXT STEPS

FOCUS GROUPS

WP2 allowed the research team to understand the current situation about e-services in Belgium. The following step will be to identify, in Work Package 3 – "Requirements", the needs, ideas and requirements that the administrations have in order to be able to offer more flexible and innovative e-services, as well as the barriers that they face in doing so.

In order to receive concrete feedback from the different stakeholders on these requirements, it has been decided to organise, for each of the different COBIT enablers, a number of Focus groups. Within those Focus groups – which always focus on a specific enabler – it will also be possible to touch on the subject of potential solutions that could be deployed. After those Focus groups, the data will be coded and interpreted to see what possible solutions are more preferred than others. As a final step, the data that is analysed for each of the Focus groups will be brought together to define a number of 'ideal' strategies for the development of flexible and innovative geospatial e-services.

Within each Focus groups, there will be 6 to 10 participants from the different stakeholders groups (Federal administration, Flemish administration, Walloon administration, Brussels administration, Provincial administration, Local administration, Private sector). Practical guidelines on how to conduct scientifically correct Focus groups were taken from Morgan (1997) and Stewart, Shamdasani & Rook (2007). An overview of the different Focus groups that will be conducted can be found below – as can be seen in Table 3, this will lead to a minimum of 11 Focus groups.

Table 3: Focus groups

	Researcher 1	**Researcher 2**	**Researcher 3**	**Researcher 4**
Processes	X (1 or 2 Focus groups)			
Service Infrastructures	X (1 or 2 Focus groups)			
People, skills & competences		X (1 Focus group)	X (1 Focus group)	
Principles, policies & frameworks		X (2 Focus groups)		
Culture, ethics & behaviour				X (1 Focus group)
Organisational structures			X	X (2 Focus groups)
Semantics & location-based data			X (2 Focus groups)	

Nevertheless, this number can still increase, as it is important to ensure that there is a saturation. This occurs when the researcher concludes that the organisation of extrafFocus groups is no longer relevant as those are expected to generate exactly the same results as the previous Focus groups.

INTERNATIONAL PRACTICE COMPARISON

Currently, the team is also conducting an international practice comparison. It refers to the collection and evaluation of international practices of e-service delivery based on the reports of the European Union and the United Nations. The practices could refer to activities inside and/or outside the geospatial domain. In order to conduct the review in a systematic way, the COBIT enablers are, once again, used. This will allow the researchers

to make the connection between the current challenges listed in this report, and relevant international solutions or good practices. This comparison will not only be relevant for WP3, but will also constitute a solid basis for WP4 – "Enablers".

CONCLUSION

In this report, the FLEXPUB team outlined the results of WP2, which aimed to understand the current e-service situation in Belgium. This will in turn allow the research team to identify, in Work Package 3 – "Requirements", the needs and challenges that the administrations have in order to be able to offer more flexible and innovative e-services, as well as the barriers that they face in doing so. At a later stage, the research team will suggest, in Work Package 4 – "Enablers", solutions to fulfil those needs and overcome those barriers.

Although the report points out some areas worth improving, the Belgian administrations have performed above average when compared to other European Union Member States, and well-above average on a global scale.

Actions have been taken to move forward on the path of digitalisation from an administrative perspective and there seems to be a willingness to take it even further. Nevertheless, strong challenges remain. The researchers are well-aware that this report can be read in negative way. This stems from the fact that the intention of this report was not so much to focus on the numerous positive actions undertaken by the Belgian administrations, but rather to understand these challenges, in order to later find solutions that will be more valuable than another positive report about previous actions.

Based on the COBIT enabler a number of challenges have been defined:

- **Processes**
  - Stakeholders' participation in e-service development
  - Divergences of opinions on private sector participation
- **Organisational structures**
  - Inter-organisational relations between different administrative levels and at the same level
  - Leadership for the digital agenda
- **Service infrastructure and applications**
  - Lack of shared hardware and software
  - Interoperability
  - User-friendliness of e-services
  - Innovation Status in Administrations
- **People, skills and competencies**
  - Digital divide among citizens
  - Public sector attractiveness
  - Lack of financial resources
- **Culture, ethics and behaviour**
  - Fear of change for impact of technologies
  - Strong silo structure
  - Lack of sufficient political support
- **Principles, policies and frameworks**
  - Divergences of opinion on Open Data policies
  - Compliance with data protection and security rules
- **Semantics & Location-based data**

The next steps are the focus groups and the finalization of the international practice comparison. Those will be conducted by the end of 2017. On the basis of these actions, a first draft strategy will be defined and then tested via the case studies (WP5).

Finally, the team would like to thank all those who participated in the WP2. Without the people who were interviewed and who answered to the online questionnaire, the team would have been unable to identify the current situation and the daily challenges concerning geospatial e-services in Belgium. This report should not be read in a negative way, but rather as a starting point towards the development of future innovative and flexible e-services, to which all different stakeholders will be able to contribute.

ANNEXES

ANNEX 1: QUESTIONNAIRE – FRENCH VERSION

Red = Instructions for IVOX programmer = They are voluntarily in English

Footnotes: The footnotes will only appear on the screen of the respondent, if he / she points the mouse on the word defined in the footnote. The word / concept should be underlined in the question / statement.

First screen

Nous vous remercions d'avoir accepté de compléter ce questionnaire ! Veuillez noter qu'il n'y a pas de bonne ou de mauvaise réponse, dès lors que nous vous considérons comme étant un(e) expert(e) au sein de votre organisation.

Second screen

1. Quels types d'interactions, via des réseaux électroniques, considérez-vous comme étant des e-services publics ? Veuillez cocher les cases pertinentes pour vous.

   More than one answer possible.

   a. Administration à Administration (G2G)
   b. Administration à Entreprise (G2B)
   c. Administration à Citoyen (G2C)
   d. Citoyen à Administration (C2G)
   e. Entreprise à Administration (B2G)
   f. Citoyen à Citoyen (C2C)

2. Quels sont les e-services publics[11] proposés par l'administration fédérale et utilisés par votre organisation ? Veuillez indiquer un e-service public par case et veuillez cocher la petite case sur le côté si vous estimez que cet e-service public repose sur des données géographiques[12].

   This is an open question – 10 boxes appear, the respondent can enter one service per box. If the respondent has entered an e-service, he/she also has to indicate if it is an e-service that relies on location based data. Only if the 10 options are filled in, the respondent can ask for other boxes. Those extra boxes will appear via another question (as this is required by the programming).

3. *If Q2 is not filled in, then question:* Pourquoi votre organisation n'utilise-t-elle pas d'e-services fédéraux?

   Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.

   a. Nous ne sommes pas au courant de leur existence

[11] Interaction via l'utilisation de réseaux électroniques entre un fournisseur de services et un consommateur de services en vue de fournir un service, dans le but de rencontrer des besoins dans l'intérêt général.

[12] Toute donnée qui est liée à un lieu terrestre (ex : adresses, points d'intérêts, etc.).

b. C'est trop compliqué à utiliser
c. Cela prend trop de temps à utiliser
d. Nous ne voyons pas la valeur ajoutée des e-services par rapport aux services traditionnels
e. Cela n'est pas pertinent pour notre politique
f. Cela n'augmente pas la cohérence et la consistance de notre politique
g. Cela ne nous aide pas à atteindre nos objectifs
h. Nous n'avons pas confiance dans le fonctionnement des e-services
i. Pour éviter les problèmes d'atteinte à la vie privée
j. Autre : …

4. *If Q2 is filled in, then question*: Pourquoi votre organisation utilise-t-elle des e-services fédéraux ?
Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.
   a. Afin de se conformer aux obligations légales
   b. Cela cadre avec la politique de notre organisation
   c. Cela fait partie de la culture de mon organisation, même s'il n'y a pas d'obligation administrative ou légale de le faire
   d. Cela permet de gagner du temps
   e. Cela réduit les coûts
   f. Cela aide mon organisation à atteindre ses objectifs
   g. Cela s'adapte mieux aux besoins changeants des utilisateurs
   h. Cela facilité l'interopérabilité
   i. Cela augmente la transparence de mon organisation
   j. Autre : …
5. *If Q2 is filled, but no 'location based data'-box is ticked in Q2 (comes after Q4), then question:* Pourquoi votre organisation n'utilise-t-elle pas d'e-services fédéraux reposant sur des données géographiques ?
Answers have to appear randomized, except for l. (remains last one). More than one answer is possible.
   a. Nous n'étions pas au courant de leur existence
   b. C'est trop compliqué à utiliser
   c. Cela prend trop de temps à utiliser
   d. Pour éviter les problèmes d'atteinte à la vie privée
   e. Nous n'avons jamais entendu parler de données géographiques
   f. Nous ne voyons pas la valeur ajoutée des e-services reposant sur des données géographiques par rapport aux e-services traditionnels
   g. Cela n'est pas pertinent pour notre politique
   h. Cela n'augmente pas la cohérence et la consistance de notre politique
   i. Cela ne nous aide pas à atteindre nos objectifs

j. Nous n'avons pas confiance dans le fonctionnement des e-services
k. Nous ne sommes pas sûr(e) que les e-services que nous utilisons reposent sur des données géographiques
l. Autre : …

Third screen

6. Quel(s) est/ sont le(s) e-service(s) fournis par votre organisation ? Veuillez indiquer un e-service par case, et veuillez cocher la petite case sur le côté si vous estimez que cet e-service repose sur des données géographiques.
   10 boxes appears and allows respondent to type the names of e-services. If an e-service is given, the respondent has to tick the box on the right side of it when it is an e-service with a location based component. (same structure as Q2 – respondent can get more boxes as in Q2)
7. *If Q6 is not filled, then question*: Pourquoi votre organisation ne fournit-elle pas d'e-service(s) ? *Answers have to appear randomized, except for i. (remains last one). More than one answer is possible*.
   a. Manque de moyens (temps, personnel, connaissances IT)
   b. Manque de ressources financières
   c. Manque d'infrastructure technique adéquate
   d. La structure étatique est trop complexe pour développer un e-service
   e. Mon organisation ne voit pas la valeur ajoutée des e-services par rapport aux services traditionnels
   f. Mon organisation remet en cause la fiabilité des e-services
   g. Mon organisation n'est pas au courant de l'existence d'utilisateurs potentiels
   h. Les e-services publics fournis par d'autres administrations sont suffisants pour répondre aux besoins de nos utilisateurs
   i. Autre : …
8. *If Q6 - one or several e-services filled in by respondent, then question:* Pourquoi votre organisation a-t-elle développé un/des e-service(s) ?
   Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.
   a. Afin de se conformer aux obligations légales
   b. Cela cadre avec la politique de mon organisation
   c. Cela fait partie de la culture de mon organisation, même s'il n'y a pas d'obligation administrative ou légale de le faire
   d. Cela permet de gagner du temps
   e. Cela réduit les coûts
   f. Cela aide mon organisation à atteindre ses objectifs

g. Cela s'adapte mieux aux besoins changeants des utilisateurs
h. Cela facilité l'interopérabilité
i. Cela augmente la transparence de mon organisation
j. Autre : …

Fourth screen

9. Quels sont les projets actuels et/ou planifiés de création d'e-services publics reposant sur des données géographiques dans lesquels votre organisation est impliquée ? Veuillez ne pas remplir de cases si votre organisation n'a pas de tels projets.
   10 boxes appear, the respondent can ask for more boxes when the 10 others are filled in – those boxes appear in another question (required for the programming).

Fifth screen

10. *If Q6 - one or several e-services filled in by respondent, then question :* Votre organisation utilise-t-elle les processus suivants pour développer ses e-services ?
    More than one answer possible.
    a. Méthode de conception de logiciel « Agile »
    b. Coproduction/Cocréation
    c. Aucun des deux processus ci-dessus
    d. Je ne sais pas
11. *If Q6 - one or several e-services filled in by respondent, then question* : Votre organisation utilise-t-elle les infrastructures suivantes pour fournir son/ses e-service(s)?
    Answers have to appear randomized, except for g. and h. (remains last one). More than one answer is possible.
    a. Architecture orientée service
    b. Cloud Computing
    c. Microservices
    d. Internet des objets
    e. Présentation des services en tant qu'événements de vies (ex : naissance, décès, etc.)
    f. Capteurs/Appareils mobiles
    g. Autre : …
    h. Je ne sais pas
12. *If Q10 is a., then question:* Parmi les méthodes suivantes, lesquelles ont été utilisées par votre organisation ?
    Answers have to appear randomized, except for g. and h.. (remains last one)

a. Extreme Programming (XP)
b. SCRUM
c. Feature Driven Development
d. Dynamic Systems Development Method (DSDM)
e. Lean Development/Management
f. Méthode faite sur mesure
g. Autre : …
h. Je ne sais pas

Sixth screen

13. Comment votre organisation procède-t-elle pour identifier les besoins/exigences des parties prenantes de ses e-services ?

Answers have to appear randomized, except for f. (remains last one). More than one answer is possible.

a. En impliquant les utilisateurs dans la création de l'e-service
b. En faisant usage de support interne
c. En recourant à un intégrateur de services[13]
d. En sous-traitant l'ingénierie des exigences à un tiers
e. En réutilisant les bonnes pratiques de l'industrie comme base pour les besoins/exigences
f. Autre : …

13 – bis. *If Q13 d. is ticked, then question*: A qui avez-vous sous-traité l'ingénierie des exigences ?

Open question.

14. *If Q10 is b. or if Q13 is a., then question*: Pourquoi votre organisation inclut-elle les utilisateurs dans la création de ses e-services ?

More than one answer is possible. Answers have to appear randomized, except for h. (remains last one).

a. Afin d'améliorer la qualité du service
b. Afin d'améliorer l'efficacité et le résultat
c. Afin de renforcer la confiance des utilisateurs dans mon organisation
d. Afin d'augmenter le sentiment d'inclusion des utilisateurs
e. Afin d'augmenter la productivité
f. Afin de réduire les coûts et les dépenses budgétaires
g. Parce qu'il existe une pression politique nous incitant à procéder de la sorte
h. Autre : …

[13] Infrastructure ayant pour mission de s'assurer, au sein d'un réseau d'administrations publiques, du bon déroulement de l'échange électronique d'informations entre différentes sources (ex : FEDICT, Banque Carrefour de la Sécurité Sociale, Centre d'Informatique pour la Région bruxelloise, e-Wallonie-Bruxelles Simplification, Agentschap Informatie Vlaanderen).

15. *If Q13 is a., then question:* A quel stade du processus votre organisation inclut-elle les utilisateurs dans la création de ses e-services ?

    More than one answer is possible.

    a. Initiation du projet (décision de développer un e-service)
    b. Analyse des besoins/exigences (résultant dans une liste des besoins/exigences des parties prenantes)
    c. Conception (interface utilisateur et architecture logicielle)
    d. Implémentation de l'e-service (résultant en un logiciel)
    e. Vérification de l'e-service
    f. Maintenance (évaluation de l'e-service)

16. *If Q13 is a.*: Comment votre organisation collecte-t-elle les besoins/exigences des utilisateurs ?

    More than one answer is possible. Answers have to appear randomized, except for j. (remains last one).

    a. Ils sont représentés dans l'équipe du projet
    b. Nous les impliquons dans des ateliers pour utilisateurs
    c. Nous mettons à leur disposition une plateforme en ligne pour soumettre des idées, commentaires, feed-back
    d. Nous interagissons avec eux via les réseaux sociaux
    e. Nous procédons à des enquêtes (en ligne)
    f. Via des interviews / discussions en groupe
    g. Nous les invitons à participer à des Living Lab[14]
    h. Via des tests d'utilisation sur des prototypes d'e-services
    i. Nous utilisons un méthode existante d'ingénierie des exigences
    j. Autre : …

17. *If Q13 is not a., then question*: Pourquoi votre organisation n'inclut-elle pas les utilisateurs dans la création de ses e-services ?

    More than one answer possible. Answers have to appear randomized, except for j. and k. (remains last one)

    a. Il est difficile de mobiliser des volontaires
    b. Nous n'avons pas de méthodologie pour ce faire
    c. La valeur ajoutée résultant de l'inclusion des utilisateurs d'e-services n'est pas claire
    d. Il est difficile d'identifier des échantillons clairs et représentatifs d'utilisateurs de services
    e. Manque de ressources financières
    f. Manque d'infrastructure technique adéquate

[14] Ecosystème d'innovation qui explore de nouveaux concepts et idées en impliquant les gouvernements, les entreprises et les citoyens.

g. Manque de moyens (temps, personnel, connaissances IT)

h. Cela ne fait pas partie de la culture de mon organisation

i. Manque de coordination entre les différents niveaux de pouvoirs

j. Autre : …

k. Je ne sais pas

Seventh screen

18. A quelle fréquence votre organisation traite[15]-t-elle des données géographiques ?

If Q18 is f., then go directly to Q20.

a. Jamais

b. De façon mensuelle

c. De façon hebdomadaire

d. De façon quotidienne

e. Mon organisation traite de telles données, mais je ne sais pas à quelle fréquence

f. Je ne sais pas si mon organisation traite de telles données

19. *If question Q18 is a., then question:* Pourquoi votre organisation ne traite-t-elle pas de données géographiques ?

More than one answer possible. Answers have to appear randomized, except for h. and i. (remains last one).

a. Pas de valeur ajoutée potentielle pour mon organisation

b. Pas de valeur ajoutée potentielle pour nos utilisateurs

c. Manque de ressources financières

d. Des restrictions légales nous empêchent de le faire

e. Manque de moyens (temps, personnel, connaissances IT)

f. Manque d'infrastructure technique adéquate

g. Pas d'accès à ce type de données

h. Autre : …

i. Je ne sais pas

20. *If Q18 is b.-e., then question:* Pourquoi votre organisation traite-t-elle des données géographiques ?
More than one answer possible. Answers have to appear randomized, except for j. (remains last one).

a. Afin de se conformer aux obligations légales

b. Cela cadre avec la politique de mon organisation

c. Cela fait partie de la culture de mon organisation, même s'il n'y a pas d'obligation

[15] Toute opération ou ensemble d'opérations effectuées sur des données ou sur des jeux de données, telles que la collecte, l'enregistrement, l'organisation, la structuration, la conservation, l'adaptation ou la modification, l'extraction, la consultation, l'utilisation, la production, la communication par transmission, la diffusion ou toute autre forme de mise à disposition, le rapprochement ou l'interconnexion, ainsi que le verrouillage, l'effacement ou la destruction.

administrative ou légale de le faire

d. Cela permet de gagner du temps
e. Cela réduit les coûts
f. Cela aide mon organisation à atteindre ses objectifs
g. Pour s'adapter aux besoins changeants des utilisateurs
h. Cela facilite l'interopérabilité
i. Cela augmente la transparence de mon organisation
j. Autre : …

Eight screen

21. Veuillez indiquer parmi les types de jeux de données géographiques suivants ceux que vous utilisez (« Utilisation »), que vous produisez (« Production ») et ceux dont vous avez besoin mais dont vous ne disposez pas (« Nécessaire mais indisponible »).

Types of datasets will appear randomly to avoid biased selection by respondents, only categories "Other:…" and "I don't know" remain at the two last rows of the table. Only the underlined concepts appear at first sight. The definition and examples only appear if the respondent point the mouse on the concept.

	Utilisation	Production	Nécessaire mais indisponible
Agriculture (élevage d'animaux et/ou culture de plantes. Ex: agriculture, plantations, élevage,…)			
Biote (flore et/ou faune dans un environnement naturel. Ex: faune, végétation, habitat)			
Frontières (descriptions légales des terres. Ex: frontières politiques et administratives)			
Climatologie/Météorologie (processus et phénomènes de l'atmosphère. Ex: météo, climat, conditions atmosphériques)			
Economie (activités et conditions économiques et emploi. Ex: commerce, industrie, tourisme, exploitation de ressources)			
Elévation (hauteur au-dessus ou sous le niveau de la mer. Ex: altitude, bathymétrie)			
Environnent (ressources environnementales, protection et conservation. Ex: pollution, traitement et stockage des déchets, réserves naturelles)			

Information géoscientifique (information ayant trait aux sciences terrestres. Ex: géophysique, géologie, tremblements de terre)			
Santé (santé, services de soin, écologie humaine et sécurité. Ex: maladies, hygiène, services de soin)			
Cartes de Référence de la Couverture Terrestre (Ex: couverture terrestre, cartes topographiques)			
Imagerie de la Terre (images de la Terre. Ex: imagerie satellite, photographie aérienne, LIDAR)			
Renseignement Militaire (bases, structures et activités militaires. Ex: bâtiments et transports militaires)			
Eaux intérieures (caractéristiques des eaux intérieures, systèmes de drainage et leurs caractéristiques. Ex: cours d'eau, plans d'utilisation de l'eau, barrages, inondations)			
Localisation (information et services de localisation. Ex: adresses, réseaux géodésiques, points de contrôle, zones et services postaux, noms de lieux)			
Océans (caractéristiques des masses d'eau salée. Ex: marées, informations côtières, récifs)			
Planification Cadastrale (information utilisée pour les actions appropriées en matière d'utilisation future de la surface terrestre. Ex: cartes de l'utilisation des sols, plans de zonage, enquêtes cadastrales, propriété des terres)			
Société (caractéristiques des sociétés et des cultures. Ex: archéologie, éducation, données démographiques, espaces et activités de détente, crime et justice)			
Structures (constructions humaines. Ex: bâtiments, musées, édifices religieux, usines, maisons, monuments, magasins, tours)			
Transport (moyens et aides permettant le transport de personnes et/ou de biens. Ex: routes, aéroports, tunnels, chartes nautiques, position des navires, chartes aéronautiques, voies ferrées)			
Moyens de Communication (systèmes d'énergie, d'eau et de déchets ; et infrastructures et services de communication. Ex: sources d'énergie solaire et nucléaire,			

systèmes de distribution d'eau, d'électricité et de gaz, systèmes d'égouttage, réseaux de télécommunications)			

21 – bis. *If for a certain category of Q21, the 'use'-box is ticked, but not the corresponding 'produce'-box, then question:* Auprès de quelle(s) organisation(s) avez-vous obtenu le(s) jeu(x) de données suivants?

Only the categories that fulfill those two conditions will appear, and a box next to each of the categories that appears, allows the respondent to specify where respondent can fill in from whom he/she got the dataset(s).

22. *If Q21 reveals that one or several types of datasets is 'necessary but unavailable', then question:* Pourquoi votre organisation n'a-t-elle pas accès aux jeux de données qui lui sont nécessaires mais indisponibles ?

More than one answer possible. Answers have to appear randomized, except for g. (remains last one).

a. Mon organisation suppose que ces jeux de données existent, mais nous ne savons pas où les trouver
b. Les jeux de données sont secrets ou sont sensibles du point de vue de la vie privée
c. Manque de ressources financières
d. Manque d'infrastructure technique adéquate
e. La structure étatique est trop complexe
f. Manque de moyens (temps, personnel, connaissances IT)
g. Autre : ….

Ninth screen

23. Votre organisation considère-t-elle une ou plusieurs de ses bases de données comme étant des sources authentiques de données ?
    a. Oui
    b. Non
    c. Je ne sais pas
24. Comment sont stockées les données traitées par votre organisation ?

More than one answer possible.

a. Dans des registres physiques
b. Numériquement en interne (au sein de mon organisation, bien que la localisation physique du lieu de stockage puisse être ailleurs que dans nos bureaux)
c. Numériquement par le biais d'un sous-traitant (une autre organisation du secteur public ou privé est responsable du stockage de nos données)
d. Autre : …

e. Je ne sais pas

24 – bis. *If answer c. is ticked in Q24, then question:* Auprès de quelle(s) organisation(s) stockez-vous vos données ? *Open question*

25. Votre organisation stocke-t-elle des métadonnées relatives aux données qu'elle traite ? *More than one possible*.
    a. Oui, à propos de la conformité des jeux de données avec les modalités techniques de l'interopérabilité
    b. Oui, à propos des conditions d'accès et d'utilisation des jeux de données
    c. Oui, à propos de la qualité et de la validité des jeux de données
    d. Oui, à propos des autorités publiques responsables de l'organisation des jeux de données
    e. Oui, à propos des motifs de restriction d'accès
    f. Non
    g. Je ne sais pas

Tenth screen

26. Au sein de votre organisation, quel est l'arrangement financier le plus courant pour acquérir des données géographiques produites par le secteur public ?
    a. Mon organisation n'acquiert pas de données géographiques auprès du secteur public
    b. Mon organisation les acquiert au coût de transaction
    c. Mon organisation les acquiert au coût de revient complet (non lié au prix du marché)
    d. Mon organisation les acquiert au prix du marché
    e. Mon organisation reçoit les données gratuitement
    f. Autre : …
    g. Je ne sais pas
27. Au sein de votre organisation, quel est l'arrangement financier le plus courant pour acquérir des données géographiques produites par le secteur privé ?
    a. Mon organisation n'acquiert pas de données géographiques auprès du secteur privé
    b. Mon organisation les acquiert au coût de transaction
    c. Mon organisation les acquiert au coût de revient complet (non lié au prix du marché)
    d. Mon organisation les acquiert au prix du marché
    e. Mon organisation reçoit les données gratuitement
    f. Autre : …
    g. Je ne sais pas
28. *If in Q21 at least one category of data is ticked in the 'produce'-column, then question:* Votre organisation partage-t-elle les données géographiques qu'elle produit avec d'autres organisations ?

a. Oui
b. Non
c. Je ne sais pas

29. *If Q28 is b., then question:* Pourquoi votre organisation ne partage-t-elle pas les données géographiques qu'elle produit avec d'autres organisations?

More than one answer possible. Answers appear in a random order except h.

a. Pour des raisons de protection de la vie privée
b. Par manque de moyens (temps, personnel, connaissances IT)
c. Pour éviter des problèmes de responsabilité
d. Pour des raisons de protection par des droits de propriété intellectuelle
e. Mon organisation n'y voit aucune valeur ajoutée
f. En raison de problèmes d'interopérabilité
g. En raison d'un manque d'infrastructure technique adéquate
h. Autre : …

30. *If Q28 is a., then question:* Pourquoi votre organisation partage-t-elle les données géographiques qu'elle produit ?

More than one possible. Answers appear in a random order except j. (remains last one)

a. Afin de se conformer aux obligations légales
b. Cela cadre avec la politique de mon organisation
c. Cela fait partie de la culture de mon organisation, même s'il n'y a pas d'obligation administrative ou légale de le faire
d. Cela permet de gagner du temps
e. Cela réduit les coûts
f. Cela aide mon organisation à atteindre ses objectifs
g. Cela s'adapte mieux aux besoins changeants des utilisateurs
h. Cela facilité l'interopérabilité
i. Cela augmente la transparence de mon organisation
j. Autre : …

31. *If Q28 is a., then question:* Au sein de votre organisation, quel est l'arrangement financier le plus couramment utilisé pour partager ses données géographiques avec des organisations du secteur public ?

a. Mon organisation les vend au coût de transaction
b. Mon organisation les vend au coût de revient complet (non lié au prix du marché)
c. Mon organisation les vend au prix du marché
d. Mon organisation partage ses données gratuitement
e. Autre : …

f. Je ne sais pas

32. *If Q28 is a., then question:* Au sein de votre organisation, quel est l'arrangement financier le plus couramment utilisé par votre organisation pour partager ses données géographiques avec des organisations du secteur privé ?
    a. Mon organisation les vend au coût de transaction
    b. Mon organisation les vend au coût de revient complet (non lié au prix du marché)
    c. Mon organisation les vend au prix du marché
    d. Mon organisation partage ses données gratuitement
    e. Autre : …
    f. Je ne sais pas
33. *If Q28 is a., then question:* Votre organisation utilise-t-elle, en tant que fournisseur de données, une plateforme en ligne d'une autorité publique ou un site web pour partager ses données géographiques ?
    a. Oui
    b. Non
    c. Je ne sais pas

33 – bis. *If answer a. is ticked in Q33, then question:* Quelle est la plateforme / le site web utilisé(e) par votre organisation pour partager ses données géographiques ? *Open question*

Eleventh screen

34. Veuillez indiquer en tant qu'expert dans votre organisation dans quelle mesure vous êtes d'accord avec les affirmations suivantes. *Statements appear in random order. Likert scale with 5 points.*

	Pas du tout d'accord	Plutôt en désaccord	Ni en accord ni en désaccord	Plutôt d'accord	Tout à fait d'accord
Mon organisation fournit de façon claire et structurée des instructions sur la façon d'utiliser des données géographiques dans mon travail (ex : via des formations, cours,…).					
Mon organisation rencontre des difficultés pour localiser correctement des évènements, personnes ou objets.					
Mon organisation aimerait être plus impliquée dans la création d'e-services qui ont un impact direct sur mon travail.					

Mon organisation aimerait que le gouvernement fédéral soit plus impliqué dans la création d'e-services au niveau régional et local.						
Mon organisation aimerait acquérir de manière commune avec d'autres administrations fédérales des logiciels géographiques.						
L'utilisabilité d'un e-service est fortement dépendante de l'administration fédérale qui l'a développé.						
Mon organisation utilise un cadre de management (« management framework ») pour améliorer la fourniture de ses e-services.						
Mon organisation utilise le « European Interoperability Framework » pour améliorer la fourniture de ses e-services.						
Mon organisation souscrit au principe selon lequel les données du secteur public devraient être disponibles à la réutilisation.						
Mon organisation est d'avis qu'il est plus efficace de développer ses e-services elle-même, sans la participation d'autres partenaires.						
À l'avenir, mon organisation aimerait collaborer plus activement avec d'autres administrations au sein du même niveau de pouvoir.						
À l'avenir, mon organisation aimerait avoir plus de diversité dans la façon dont elle fournit ses e-services (smartphones, sites web, …).						
À l'avenir, mon organisation aimerait collaborer plus activement avec d'autres administrations à travers différents niveaux de pouvoir.						
Mon organisation est d'avis que le cadre législatif actuel devrait être modifié pour faciliter la collaboration avec d'autres administrations.						

Mon organisation fait usage d'un intégrateur de services en vue d'obtenir les données dont elle a besoin.						
Mon organisation estime qu'il est nécessaire d'établir un organe pilote dans le domaine des e-services.						
À l'avenir, mon organisation aimerait prendre part à un réseau où l'on discuterait de préoccupations communes en matière d'e-services.						
Mon organisation a bien connaissance du rôle de l'Institut géographique national.						
Mon organisation souscrit à l'idée selon laquelle les données du secteur public devraient être gratuitement réutilisables.						
Mon organisation fait usage de produits et de services proposés par l'Institut géographique national.						

Twelfth screen

Quelle est votre année de naissance ? *Provide them with a list of years – starting in 1900*

Quelle est votre fonction au sein de votre organisation ? *Provide them with a box to fill in their function*

Depuis combien d'années, au total, travaillez-vous ? *Provide them with a list of numbers (counting from 1 – 70)*

Vous êtes :

a. Une femme
b. Un homme
c. X

Quel est le plus haut diplôme que vous ayez obtenu?

a. Aucun diplôme
b. Enseignement primaire (jusqu'à 12 ans)
c. Enseignement secondaire inférieur (jusqu'à 15 ans)
d. Enseignement secondaire supérieur
e. Haute école
f. Université

Final screen

Selon vous, quels sont les principaux défis qui devraient être traités dans la fourniture des e-services publics en

Belgique ?

Open question – provide a box where the respondent can write his/her answer

L'équipe FLEXPUB vous remercie vivement pour votre collaboration. N'oubliez pas, vous n'avez pas rempli ce questionnaire pour nous, mais pour vous-même, votre travail et votre organisation.

Si vous avez le moindre commentaire, n'hésitez pas à nous le faire savoir dans le cadre ci-dessous : Provide a big box where the respondent can write his comments

ANNEX 2: QUESTIONNAIRE – DUTCH VERSION

Red = Instructions for IVOX programmer = They are voluntarily in English

Footnotes: The footnotes will only appear on the screen of the respondent, if he / she points the mouse on the word defined in the footnote. The word / concept should be underlined in the question / statement.

First Screen

Bedankt om deze vragenlijst in te vullen! Hou er rekening mee dat er geen juist of fout antwoord is, aangezien we u beschouwen als een expert binnen uw organisatie.

Second screen

1. Welk type interactie dat gebruik maakt van elektronische netwerken, beschouwt u als een publieke e-service? Kruis de passende vakjes aan.

   More than one answer possible.

   a. Overheid naar Overheid (G2G)
   b. Overheid naar Ondernemingen (G2B)
   c. Overheid naar Burgers (G2C)
   d. Burgers naar Overheid (C2G)
   e. Ondernemingen naar Overheid (B2G)
   f. Burgers naar Burgers (C2C)

2. Welke publieke e-services[16], aangeboden door de federale administratie, worden gebruikt door uw organisatie? Gelieve slechts één publieke e-service per vakje in te vullen en het vakje ernaast aan te kruisen als je gelooft dat deze publieke e-service steunt op het gebruik van geografische data[17].

   This is an open question – 10 boxes appear, the respondent can enter one service per box. If the

[16] Interactie, via het gebruik van elektronische netwerken, tussen een dienstenaanbieder en een dienstenconsument om zo een dienst te leveren, met als doel aan noden met een algemeen karakter te voldoen.

[17] Alle data die is gelinkt aan een locatie op Aarde (vb. adressen, 'points of interest' etc.).

respondent has entered an e-service, he/she also has to indicate if it is an e-service that relies on location based data. Only if the 10 options are filled in, the respondent can ask for other boxes. Those extra boxes will appear via another question (as this is required by the programming).

3. *If Q2 is not filled in, then question:* Waarom maakt uw organisatie geen gebruik van federale e-services?

   Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.

   k. Niet op de hoogte van hun bestaan
   l. Het is te complex om te gebruiken
   m. Het vraagt te veel tijd om te gebruiken
   n. Wij zien de toegevoegde waarde van e-services in vergelijking met traditionele diensten niet
   o. Het is irrelevant voor ons beleid
   p. Het verhoogt de coherentie en consistentie van ons beleid niet
   q. Het helpt niet om onze doelen te bereiken
   r. Ontbreken van vertrouwen in het functioneren van de e-service
   s. Om privacyproblemen te vermijden
   t. Ander: …

4. *If Q2 is filled in, then question*: Waarom maakt uw organisatie gebruik van federale e-services?

   Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.

   k. Om te voldoen aan wettelijke bepalingen
   l. Het past in het beleid van onze organisatie
   m. Het is deel van de cultuur in mijn organisatie, ook al is er geen administratieve of wettelijke verplichting om het te doen
   n. Het bespaart tijd
   o. Het vermindert de kosten
   p. Het helpt mijn organisatie haar doelen te bereiken
   q. Het is beter aangepast aan de wijzigende gebruikersnoden
   r. Het bevordert de interoperabiliteit
   s. Het verhoogt de transparantie van mijn organisatie
   t. Ander: …

5. *If Q2 is filled, but no 'location based data'-box is ticked in Q2 (comes after Q4) , then question:* Waarom gebruikt uw organisatie geen federale e-services die steunen op het gebruik van geografische data?

   Answers have to appear randomized, except for l. (remains last one). More than one answer is possible.

   b. Niet op de hoogte van hun bestaan
   c. Het is te complex om te gebruiken
   d. Het vraagt te veel tijd om te gebruiken

e. Wegens een inbreuk op de privacy
f. Wij hebben nog nooit gehoord van geografische data
g. Zien de toegevoegde waarde van e-services gebaseerd op geografische data in vergelijking met traditionele e-services niet
h. Het is irrelevant voor ons beleid
i. Het verhoogt de coherentie en consistentie van ons beleid niet
j. Het help niet om onze doelen te bereiken
k. Ontbreken van vertrouwen in het functioneren van de e-service
l. Wij zijn niet zeker dat het een e-service is die gebruik maakt van geografische data
m. Ander: …

Third screen

6. Welke e-service(s) worden door uw organisatie aangeboden? Gelieve één e-service per vakje in te vullen. Gelieve het vakje ernaast aan te kruisen als je gelooft dat het een e-service is die steunt op het gebruik van geografische data.
   10 boxes appears and allows respondent to type the names of e-services. If an e-service is given, the respondent has to tick the box on the right side of it when it is an e-service with a location based component. (same structure as Q2 – respondent can get more boxes as in Q2)
7. *If Q6 is not filled, then question*: Waarom biedt uw organisatie geen e-service(s) aan?
   Answers have to appear randomized, except for i. (remains last one). More than one answer is possible.
   j. Tekort aan capaciteit (tijd, personeel, IT kennis)
   k. Tekort aan financiële middelen
   l. Tekort aan technische infrastructuur
   m. De overheidsstructuur is te complex om een e-service te ontwikkelen
   n. Mijn organisatie ziet de toegevoegde waarde van e-services niet in vergelijking met traditionele diensten
   o. Mijn organisatie heeft vragen bij de betrouwbaarheid van de e-services
   p. Mijn organisatie is niet op de hoogte van potentiële gebruikers
   q. De publieke e-services aangeboden door andere administraties volstaan om de behoeften van onze gebruikers te dekken
   r. Ander: …
8. *If Q6 - one or several e-services filled in by respondent, then question:* Waarom heeft uw organisatie (een) e-service(s) ontwikkeld?
   Answers have to appear randomized, except for j. (remains last one). More than one answer is possible.
   a. Om te voldoen aan wettelijke bepalingen

b. Het past in het beleid van mijn organisatie
c. Het is deel van de cultuur van mijn organisatie, ook al is er geen administratieve of wettelijke verplichting om het te doen
d. Het bespaart tijd
e. Het vermindert de kosten
f. Het helpt mijn organisatie haar doelen te bereiken
g. Het is beter aangepast aan de wijzigende gebruikersnoden
h. Het bevordert de interoperabiliteit
i. Het verhoogt de transparantie van mijn organisatie
j. Ander: …

Fourth screen

9. Wat zijn de huidige en/of voorziene publieke e-service projecten waarbij uw organisatie betrokken is, die verband houden met geografische data? Gelieve deze vraag open te laten indien uw organisatie op dit moment geen projecten heeft.
   10 boxes appear, the respondent can ask for more boxes when the 10 others are filled in – those boxes appear in another question (required for the programming).

Fifth screen

10. *If Q6 – one or several e-services filled in by respondent, then question:* Maakt uw organisatie gebruik van de volgende processen om (een) e-service(s) tot stand te brengen?
    More than one answer possible.
    a. "Agile" software ontwikkelingsmethode
    b. Coproductie / Co-creatie
    c. Geen van de bovenstaande
    d. Ik weet het niet
11. *If Q6 – one or several e-services filled in by respondent, then question:* Maakt uw organisatie gebruik van de volgende infrastructuur bij het aanbieden van haar e-service(s)?
    Answers have to appear randomized, except for g. and h.. (remains last one). More than one answer is possible.
    i. Service Oriented Architecture
    j. Cloud Computing
    k. Micro-services
    l. Internet of things
    m. Voorstelling van e-services aan de hand van levensgebeurtenissen (bv. geboorte, overlijden

etc.)

n. Sensoren / mobiele apparaten

o. Ander: …

p. Ik weet het niet

12. *If Q10 is a., then question:* Welke van de volgende methodes heeft uw organisatie gebruikt?

Answers have to appear randomized, except for g. and h. (remains last one)

i. Extreme Programming (XP)

j. SCRUM

k. Feature Driven Development

l. Dynamic Systems Development Method (DSDM)

m. Lean Development/Management

n. Een speciaal daartoe ontwikkelde methode

o. Ander: …

p. Ik weet het niet

Sixth screen

13. Hoe identificeert uw organisatie de behoeften/vereisten van de belanghebbenden voor e-services?

Answers have to appear randomized, except for f. (remains last one). More than one answer is possible.

If d. – e. is ticked, respondent gets the question to specify the answer.

g. Door gebruikers te betrekken bij de creatie van e-services

h. Door gebruik te maken van interne ondersteuning

i. Door een dienstenintegrator[18] te betrekken

j. Door de 'requirements engineering' uit te besteden aan een derde partij

k. Door 'best practices' van de industrie te hergebruiken als een basis voor de behoeften/vereisten

l. Andere: …

13 – bis. *If Q13 d. is ticked, then question*: Aan wie hebt u de 'requirements engineering' uitbesteed?

Open question.

14. *If Q10 is b. or if Q13 is a., then question*: Waarom betrekt uw organisatie gebruikers bij de creatie van e-services?

More than one answer is possible. Answers have to appear randomized, except for h. (remains last one).

i. Om de kwaliteit van de dienstverlening te verbeteren

[18] Infrastructuur verantwoordelijk voor het verzekeren van, binnen het netwerk van publieke overheden, de elektronische uitwisseling van informatie van verschillende bronnen (bv: FEDICT, Kruispuntbank Sociale Zekerheid, Centrum voor Informatica voor het Brusselse Gewest – Centre d'Informatique pour la Région Bruxelloise, e-Wallonie-Bruxelles Simplification, Agentschap Informatie Vlaanderen).

j. Om de effectiviteit en output te verbeteren
k. Om het vertrouwen van gebruikers in mijn organisatie op te bouwen
l. Om het betrokkenheidsgevoel van gebruikers te verhogen
m. Om de productiviteit te verhogen
n. Om budgetuitgaven en kosten te verminderen
o. Omdat er politieke druk is om dit te doen
p. Ander: …

15. *If Q13 is a., then question:* In welke fase betrekt uw organisatie de gebruikers bij de creatie van e-services?

More than one answer is possible.

g. Projectinitiatie (beslissing om een e-service te ontwikkelen)
h. Analyse van de behoeften/vereisten (resulterend in lijst met behoeften/vereisten van de belanghebbenden)
i. Ontwerp (gebruikersinterface en software architectuur)
j. Implementatie van de e-service (resulteert in software)
k. Testen van de e-service
l. Onderhoud (evaluatie van de e-service)

16. *If Q13 is a., then question:* Hoe verzamelt uw organisatie de behoeften / vereisten van gebruikers?

More than one answer is possible. Answers have to appear randomized, except for j. (remains last one).

a. Vertegenwoordiging in het projectteam
b. Betrokkenheid bij gebruikersworkshop
c. Onlineplatform waar ideeën, commentaren en feedback kunnen gegeven worden
d. Interactie via sociale media kanalen
e. Via (online) surveys
f. Via interviews / groepsdiscussies
g. Deelname aan een Living Lab[19]
h. Via een gebruikerstest met e-service prototypes
i. Door gebruik te maken van een bestaande 'requirement engineering' methode
j. Ander: …

17. *If Q13 is not a., then question*: Waarom betrekt uw organisatie geen gebruikers bij de creatie van e-services?

More than one answer possible. Answers have to appear randomized, except for j. and k. (remains last one).

l. Moeilijkheden om vrijwilligers te betrekken

[19] Innovatief ecosysteem dat nieuwe concepten en ideeën exploreert door de overheid, bedrijven en burgers te betrekken.

m. Tekort aan methodologie
n. Meerwaarde om gebruikers te betrekken is onduidelijk
o. Duidelijke en representatieve steekproef van gebruikers is moeilijk te identificeren
p. Tekort aan financiële middelen
q. Tekort aan adequate technische infrastructuur
r. Tekort aan capaciteit (tijd, personeel, IT kennis)
s. Niet in de cultuur van mijn organisatie
t. Tekort aan coördinatie tussen verschillende overheidsniveaus
u. Ander: …
v. Ik weet het niet

Seventh screen

18. Hoe vaak verwerkt[20] uw organisatie geografische data?

If Q18 is f., then go directly to Q20.

g. Nooit
h. Op maandelijkse basis
i. Op wekelijkse basis
j. Op dagelijkse basis
k. Mijn organisatie verwerkt er maar ik weet niet hoe vaak
l. Ik weet niet of mijn organisatie er verwerkt

19. *If question Q18 is a., then question:* Waarom verwerkt uw organisatie geen geografische data?

More than one answer possible. Answers have to appear randomized, except for h. and i. (remains last one).

j. Geen potentieel toegevoegde waarde voor mijn organisatie
k. Geen potentieel toegevoegde waarde voor onze gebruikers
l. Tekort aan financiële middelen
m. Wettelijke beperkingen verhinderen ons dit te doen
n. Tekort aan capaciteit (tijd, personeel, IT kennis)
o. Tekort aan adequate technische infrastructuur
p. Geen toegang tot dat type data
q. Ander: …
r. Ik weet het niet

[20] Een bewerking of een geheel van bewerkingen met betrekking tot persoonsgegevens of een geheel van persoonsgegevens, al dan niet uitgevoerd via geautomatiseerde procedés, zoals het verzamelen, vastleggen, ordenen, structureren, opslaan, bijwerken of wijzigen, opvragen, raadplegen, gebruiken, verstrekken door middel van doorzending, verspreiden of op andere wijze ter beschikking stellen, aligneren of combineren, afschermen, wissen of vernietigen van gegevens

20. *If Q18 is b.-e., then question:* Waarom verwerkt uw organisatie geografische data? *More than one answer possible. Answers have to appear randomized, except for j. (remains last one).*
    a. Om te voldoen aan wettelijke bepalingen
    b. Het past in het beleid van mijn organisatie
    c. Het is deel van de cultuur van mijn organisatie, ook al is er geen administratieve of wettelijke verplichting om het te doen
    d. Het bespaart tijd
    e. Het vermindert de kosten
    f. Het helpt mijn organisatie haar doelen te bereiken
    g. Om aan de wijzigende gebruikersnoden te voldoen
    h. Het bevordert de interoperabiliteit
    i. Het verhoogt de transparantie van mijn organisatie
    j. Ander: …

Eight screen

21. Gelieve aan de duiden welk van de volgende types geografische datasets uw organisatie momenteel 'gebruikt', 'produceert' of 'nodig heeft maar niet bezit'.
    Types of datasets will appear randomly to avoid biased selection by respondents, only categories "Other:…" and "I don't know" remain at the two last rows of the table. Only the underlined concepts appear at first sight. The definition and examples only appear if the respondent point the mouse on the concept.

	Gebruikt	Produceert	Nodig heeft maar niet bezit
Landbouw (kweken van dieren en/of verbouwen van planten. Bv. Landbouw, plantages, veeteelt,…)			
Biota (flora en/of fauna in natuurlijke omgeving. Bv. fauna, vegetatie, habitat)			
Grenzen (wettelijke landbeschrijvingen. Bv. politieke en administratieve grenzen)			
Klimaat/Meteorologie (processen en fenomenen van de atmosfeer. Bv. weer, klimaat, atmosferische omstandigheden)			
Economie (economische activiteiten, voorwaarden en tewerkstelling. Bv. handel, industrie, toerisme, exploitatie van bronnen)			
Hoogte (hoogte boven of onder het zeeniveau. Bv.			

hoogtemeting, dieptemeting)			
Milieu (natuurlijke bronnen, bescherming en conservatie. Bv. verontreiniging, afvalopslag en behandeling, natuurlijke reserves)			
Geo-wetenschappelijke informatie (informatie met betrekking tot aardwetenschappen. Bv. geofysica, geologie, aardbevingen)			
Gezondheid (gezondheid, gezondheidsdiensten, menselijke ecologie, en veiligheid. Bv. ziektes, hygiëne, gezondheidsdiensten)			
Basiskaarten (Bv. bodembedekking, topografische kaarten)			
Beelden van de aarde (Bv**.** satellietbeelden, luchtfoto's, LIDAR)			
Militaire inlichtingen (militaire basissen, structuren, activiteiten. Bv. militaire gebouwen en transport)			
Binnenwateren (binnenwaterkenmerken, drainagesystemen en hun karakteristieken. Bv. rivieren, watergebruiksplannen, dammen, overstromingen)			
Locatie (informatie en diensten over een positie. Bv. adressen, geodetische netwerken, controlepunten, postzones en diensten, plaatsnamen)			
Oceanen (kenmerken en karakteristieken van zoutwatermassa's. Bv. getijden, kustinformatie, riffen)			
Kadastrale plannen (informatie gebruikt voor gepaste acties betreffende het toekomstige gebruik van land. Bv. bodemgebruikskaarten, plankaarten, kadastrale bevragingen, landeigenaarschap)			
Samenleving (kenmerken van de samenleving en culturen. Bv. archeologie, onderwijs, demografische data, recreatiegebieden en activiteiten, criminaliteit en justitie)			
Structuur (door de mens gemaakte constructies. Bv. gebouwen, musea, religieuze gebouwen, fabrieken, huizen, monumenten, winkels, torens)			

Transport ((hulp)middelen om mensen en/of goederen te vervoeren. Bv. wegen, luchthavens, tunnels, zeekaarten, vaartuiglokalisatie, luchtvaartkaarten, spoorwegen)			
Communicatiemogelijkheden (energie-, water- en afvalsystemen en communicatie-infrastructuur en diensten. Bv. zonne- en nucleaire energie, watervoorzieningen, rioolwater, elektriciteit- en gasverdeling, telecommunicatienetwerken)			

21 – bis. *If for a certain category of Q21, the 'use'-box is ticked, but not the corresponding 'produce'-box, then question:* Van welke organisatie(s) krijgt uw organisatie de dataset(s)?

Only the categories that fulfill those two conditions will appear, and a box next to each of the categories that appears, allows the respondent to specify where respondent can fill in from whom he/she got the dataset(s).

22. *If Q21 reveals that one or several types of datasets is 'necessary but unavailable', then question:*

Waarom heeft uw organisatie geen toegang tot de datasets die het 'nodig heeft maar niet bezit'?

More than one answer possible. Answers have to appear randomized, except for g. (remains last one).

h. Mijn organisatie vermoedt dat de dataset(s) bestaat / bestaan maar we weten niet waar ze te vinden
i. De dataset(s) is / zijn geheim of privacy gevoelig
j. Tekort aan financiële middelen
k. Tekort aan adequate technische infrastructuur
l. De overheidsstructuur is te complex
m. Tekort aan capaciteit (tijd, personeel, IT kennis)
n. Ander: …

Ninth screen

23. Beschouwt uw organisatie één of meerdere van zijn databases als authentieke bronnen van data?
    a. Ja
    b. Nee
    c. Ik weet het niet
24. Hoe worden de data die uw organisatie verwerkt bewaard?

More than one answer possible. Answer c. allows the respondent to write down who is storing the data.

f. In fysieke dossiers

g. Digitaal in huis (in mijn eigen organisatie, hoewel de fysieke locatie elders kan zijn dan ons kantoor)
h. Digitaal uitbesteed (organisatie uit de publieke of de private sector is verantwoordelijk voor het opslaan van onze data).
i. Ander: …
j. Ik weet het niet

24 – bis. *If Q24 is c., then question*: In welke organisatie(s) worden uw data bewaard?

Open question. A box has to appear where the respondent can fill in the name of the organisation.

25. Bewaart uw organisatie metadata over de datasets die ze verwerkt?

More than one answer possible.

h. Ja, over de conformiteit van de datasets met de technische interoperabiliteitsmodaliteiten
i. Ja, over de toegang en de gebruiksvoorwaarden van de datasets
j. Ja, over de kwaliteit en de validiteit van de datasets
k. Ja, over de publieke autoriteiten verantwoordelijk voor de organisatie van de datasets
l. Ja, over de redenen van de toegangsrestricties
m. Nee
n. Ik weet het niet

Tenth screen

26. Wat is, binnen uw organisatie, de meest voorkomende financiële overeenkomst om geografische data geproduceerd door de publieke sector te verwerven?

h. Mijn organisatie koopt geen geografische data van de publieke sector
i. Mijn organisatie koopt ze aan tegen de transactiekost
j. Mijn organisatie koopt ze aan tegen de complete kostprijs (niet-marktgerelateerde prijs)
k. Mijn organisatie koopt ze aan tegen de marktprijs
l. Mijn organisatie krijgt de data gratis
m. Ander: …
n. Ik weet het niet

27. Wat is, binnen uw organisatie, de meest voorkomende financiële overeenkomst om geografische data geproduceerd door de private sector te verwerven?

h. Mijn organisatie koopt geen geografische data van de private sector
i. Mijn organisatie koopt ze aan tegen de transactiekost
j. Mijn organisatie koopt ze aan tegen de complete kostprijs (niet-markt gerelateerde prijs)
k. Mijn organisatie koopt ze aan tegen de marktprijs
l. Mijn organisatie krijgt de data gratis

m. Ander: …

n. Ik weet het niet

28. *If in Q21 at least one category of data is ticked in the 'produce'-column, then question:* Deelt uw organisatie geografische data die ze produceert met andere organisaties?

d. Ja

e. Nee

f. Ik weet het niet

29. *If Q28 is b., then question:* Waarom deelt uw organisatie geen geografische data die ze produceert met andere organisaties?

More than one answer possible. Answers appear in a random order except h. (remains last one)

i. Om privacyredenen

j. Omdat er onvoldoende capaciteit is (tijd, personeel, IT kennis)

k. Om aansprakelijkheidsredenen

l. Om redenen verbonden aan intellectueel eigendomsrecht

m. Omdat mijn organisatie de toegevoegde waarde niet ziet

n. Om interoperabiliteitsredenen

o. Omdat er onvoldoende adequate technische capaciteit is

p. Ander: …

30. *If Q28 is a., then question:* Waarom deelt uw organisatie de geografische data die ze produceert?

More than one possible. Answers appear in a random order except j. (remains last one)

a. Om te voldoen aan wettelijke bepalingen

b. Het past in het beleid van mijn organisatie

c. Het is deel van de cultuur van mijn organisatie, ook al is er geen administratieve of wettelijke verplichting om het te doen

d. Het bespaart tijd

e. Het vermindert de kosten

f. Het helpt mijn organisatie haar doelen te bereiken

g. Het is beter aangepast aan de wijzigende gebruikersnoden

h. Het bevordert de interoperabiliteit

i. Het verhoogt de transparantie van mijn organisatie

j. Ander: …

31. *If Q28 is a., then question:* Wat is, binnen uw organisatie, de meest voorkomende financiële overeenkomst om geografische data te delen met organisaties uit de publieke sector?

g. Mijn organisatie verkoopt ze tegen de transactiekost

h. Mijn organisatie verkoopt ze tegen de complete kostprijs (niet-markt gerelateerde prijs)

i. Mijn organisatie verkoopt ze tegen de marktprijs

j. Mijn organisatie stelt de data gratis ter beschikking

k. Ander: …

l. Ik weet het niet

32. *If Q28 is a., then question:* Wat is, binnen uw organisatie, de meest voorkomende financiële overeenkomst om geografische data te delen met organisaties uit de private sector?

g. Mijn organisatie verkoopt ze tegen de transactiekost

h. Mijn organisatie verkoopt ze tegen de complete kostprijs (niet-markt gerelateerde prijs)

i. Mijn organisatie verkoopt ze tegen de marktprijs

j. Mijn organisatie stelt de data gratis ter beschikking

k. Ander: …

l. Ik weet het niet

33. *If Q28 is a., then question:* Gebruikt uw organisatie, als aanbieder van data, een online overheidsplatform of website om haar geografische data te delen?

If respondent ticks a., then a box opens that allows respondent to write down the platform or website.

d. Ja

e. Nee

f. Ik weet het niet

33 – bis. *If Q33 is a., then question*: Welk online overheidsplatform of website wordt gebruikt om geografische data te delen?

Open question. Respondent gets a box to write down the name of the platform or website.

Eleventh screen

34. Gelieve aan te duiden in welke mate u, als een expert van uw organisatie, akkoord gaat met de volgende beweringen.

Statement appear in random order. Likert scale with 5 points.

	Helemaal oneens	Eerder oneens	Noch eens, noch oneens	Eerder eens	Helemaal eens
Mijn organisatie verschaft, op een duidelijke en gestructureerde manier, instructies over hoe gebruik te maken van geografische data in mijn werk (i.e. via werkgroepen, klassen etc.).					
Mijn organisatie wordt geconfronteerd met moeilijkheden in verband met het juist lokaliseren van evenementen, personen of objecten.					

Mijn organisatie zou graag meer betrokken zijn in de creatie van e-services die een directe impact hebben op mijn werk.						
Mijn organisatie zou graag hebben dat de federale overheid meer betrokken is bij de creatie van e-services op het gewestelijke en lokale niveau.						
Mijn organisatie zou graag samen met andere federale administraties geo-software verwerven.						
De gebruiksvriendelijkheid van een e-service is sterk afhankelijk van de federale administratie die het ontwikkeld heeft.						
Mijn organisatie maakt gebruik van een 'management framework' om het aanbieden van zijn e-services te verbeteren.						
Mijn organisatie maakt gebruik van het "European Interoperability Framework" om het aanbieden van zijn e-services te verbeteren.						
Mijn organisatie gaat akkoord met het principe dat data van de publieke sector open moeten zijn voor hergebruik.						
Mijn organisatie gelooft dat het efficiënter is om zijn e-services op zichzelf te ontwikkelen, zonder de participatie van andere partners.						
In de toekomst zou mijn organisatie graag actiever samenwerken met andere administraties binnen hetzelfde overheidsniveau.						
In de toekomst zou mijn organisatie graag meer diversiteit bieden in de manier waarop e-services worden aangeboden (smartphones, website etc.).						
In de toekomst zou mijn organisatie graag actiever samenwerken met andere administraties over verschillende overheidsniveaus heen.						
Mijn organisatie gelooft dat de huidige wetgeving aangepast dient te worden om samenwerking met andere administraties te vereenvoudigen.						
Mijn organisatie maakt gebruik van een dienstenintegrator om de data te verkrijgen die het nodig heeft.						
Mijn organisatie voelt de nood aan een gezaghebbende instelling op het terrein van de e-services.						
In de toekomst wenst mijn organisatie betrokken te zijn in een netwerk om gemeenschappelijke bezorgdheden gelinkt aan e-services te bespreken.						
Mijn organisatie is goed op de hoogte van de						

rol van het Nationaal Geografisch Instituut.					
Mijn organisatie gaat akkoord met het idee dat publieke sector data gratis beschikbaar moeten zijn voor hergebruik.					
Mijn organisatie maakt gebruik van producten en diensten aangeboden door het Nationaal Geografisch Instituut.					

Twelfth screen

Wat is uw geboortejaar? *Provide them with a list of years – starting in 1900*

Wat is uw functie in de organisatie? *Provide them with a box to fill in their function.*

Hoeveel jaar werkt u al in totaal? *Provide them with a list of numbers (counting from 1 – 70)*

U bent een:

d. Vrouw
e. Man
f. X

Wat is het hoogte diploma dat u behaald hebt?

a. Geen diploma
b. Basisonderwijs (tot 12 jaar)
c. Lager secundair onderwijs (tot 15 jaar)
d. Hoger secundair onderwijs (tot 18 jaar)
e. Hogeschool
f. Universitair

Final screen

Wat zijn volgens u de belangrijkste uitdagingen die aangepakt moeten worden wat het aanbieden van e-services in België betreft?

Open question – provide a box where the respondent can write his/her answer.

Het FLEXPUB team wenst u te danken voor uw medewerking. Vergeet het niet – u vulde deze vragenlijst niet in voor ons, maar voor uzelf, uw werk en uw organisatie.

Indien u een laatste opmerking wil maken, dan kan u dit doen in het vakje hieronder:

Provide a big box where the respondent can write his comments

ANNEX 3: GENERAL QUESTIONNAIRE INVITATION EMAIL – FRENCH

Chère / Cher X,

Nous vous contactons dans le cadre du projet FLEXPUB, dont vous avez peut-être déjà entendu parler. Il s'agit d'un projet de recherche, d'une durée de 4 ans (2016-2020), impliquant la KU Leuven, l'UNamur et l'Institut Géographique National. Notre but est de créer une stratégie pour le développement d'une nouvelle génération de services publics électroniques (e-services) flexibles en Belgique.

Au travers de ce questionnaire, nous allons tenter d'identifier vos besoins et attentes concernant la fourniture future de e-services. Votre expertise et votre expérience nous permettra de mieux comprendre les défis rencontrés par votre organisation en matière de digitalisation de l'administration. Votre contribution ne sera pas uniquement bénéfique pour votre organisation et vos collègues, mais aussi pour votre travail personnel.

Les résultats de cette étude seront présentés lors de différents séminaires, journées d'études et lors d'une Assemblée Générale (Printemps 2017). Ces évènements vous permettront d'interagir avec d'autres acteurs rencontrant les mêmes difficultés que vous. Veuillez noter que nos premiers résultats seront présentés durant la conférence « BeGeo » qui se tiendra le 16 mars 2017.

Nous vous remercions d'avance pour le temps que vous consacrerez au remplissage de ce questionnaire, et nous vous invitons à cliquer sur le lien ci-dessous afin d'y répondre (lien unique et individuel). Les résultats de ce questionnaire seront, bien entendu, anonymisés.

Lien : X

Nous vous remercions pour votre aide et votre soutien ! N'hésitez pas à contacter X (X) pour toute question ou commentaire éventuel.

Bien à vous,

L'équipe FLEXPUB

KU Leuven
Prof. dr. Geert Bouckaert
Prof. dr. ir. Joep Crompvoets
Prof. dr. Bruno Broucker
Prof. dr. Monique Snoeck
Maxim Chantillon
Anthony Simonofski

Université de Namur
Prof. dr. Naji Habra
Prof. dr. Cécile de Terwange
Dr. Benoît Vanderose
Thomas Tombal

Nationaal Geografisch Instituut / Institut Géographique National

Ir. Ingrid Vanden Berghe
Jan De Waele
Rink Kruk

ANNEX 4: GENERAL QUESTIONNAIRE INVITATION EMAIL – DUTCH

Beste X,

Wij contacteren u in het kader van het FLEXPUB project, waarover u misschien al gehoord heeft. Het is een 4-jarig onderzoeksproject (2016-2020) van de KU Leuven, de Université de Namur en het Nationaal Geografisch Instituut. Ons doel is het creëren van een strategie voor een nieuwe generatie flexibele publieke e-services in België.

Met deze online vragenlijst proberen we uw noden en verwachtingen rondom toekomstige e-services te inventariseren. Uw expertise en ervaring zal ons in staat stellen beter te begrijpen voor welke uitdagingen uw organisatie staat met betrekking tot de digitalisering van de overheid. Uw input is uiteindelijk niet enkel nuttig voor uw organisatie en uw collega's, maar ook voor uw persoonlijk werk.

De resultaten van de studie zullen gepresenteerd worden tijdens verschillende workshops, studiedagen en een Algemene Vergadering (voorjaar 2017). Deze evenementen zullen u de mogelijkheid geven in interactie te treden met andere belanghebbenden die met gelijkaardige uitdagingen worden geconfronteerd. Onze eerste resultaten zullen gepresenteerd worden tijdens de BeGeo conferentie op 16 maart 2017.

Wij danken u voor de tijd die u neemt om deze vragenlijst in te vullen, en we nodigen u uit om op onderstaande, unieke en geïndividualiseerde, link te klikken om de vragenlijst in te vullen. Het spreekt voor zich dat de resultaten van deze vragenlijst zullen geanonimiseerd worden.

Link: X

Bedankt voor uw hulp en medewerking! Mocht u nog vragen of opmerkingen hebben, dan kunt u deze altijd kwijt bij X (X).

Met vriendelijke groet,

Het FLEXPUB Team

KU Leuven
Prof. dr. Geert Bouckaert
Prof. dr. ir. Joep Crompvoets
Prof. dr. Bruno Broucker
Prof. dr. Monique Snoeck
Maxim Chantillon
Anthony Simonofski

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Prof. dr. Cécile de Terwange

Dr. Benoît Vanderose
Thomas Tombal

Nationaal Geografisch Instituut / Institut Géographique National
Ir. Ingrid Vanden Berghe
Jan De Waele
Rink Kruk

ANNEX 5: OVERVIEW OF E-SERVICES USED BY AT LEAST THREE ADMINISTRATIONS

1. E-procurement

Offered

Organisation	Level
SPF Personnel et Organisation/DTO	Federal
SPF Personnel et Organisation - Service interne pour la prévention et la protection au travail	Federal
FOD Kanselarij	Federal
Informatie Vlaanderen	Region (VL)
DGO des routes et des bâtiments	Region (WAL)

Used

Organisation	Level
SPF Personnel et Organisation/DTO	Federal
SPF Justice	Federal
SPF Budget et Controle de la Gestion	Federal
SPF Intérieur	Federal
SPF Personnel et Organisation - Service interne pour la prévention et la protection au travail	Federal
SPF Personnel et Organisation - Selor	Federal
FOD Kanselarij	Federal
Federaal Kenniscentrum voor de Gezondheidszorg (KCE)	Federal
Bibliothèque royale de Belgique / KRB	Federal
NGI	Federal
State Archives of Belgium	Federal
Institut des vétérans- Institut national des invalides de guerre, anciens combattants et victimes de guerre	Federal
ASTRID	Federal
Région Bruxelles (Direction achats et logistique)	Region (BXL)
Informatie Vlaanderen	Region (VL)
MOW	Region (VL)
Kanselarij	Region (VL)
DGO des pouvoirs locaux et de l'action sociale	Region (WAL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
Secretariat Général - Département de la Géomatique	Region (WAL)
DGO des routes et des bâtiments	Region (WAL)
DGO Mobilité et voies hydrauliques	Region (WAL)
Vlaams-Brabant	Province

West-Vlaanderen	Province
Antwerpen	Province
Saint-Gilles	Local level
Beveren	Local level
Liège	Local level
Two unknown communes	Local level
E&Y	Private sector
Coudere	Private sector

2. Crescendo

Offered

Organisation	Level
SPF Personnel et Organisation	Federal

Used

Organisation	Level
SPF Personnel et Organisation/DTO	Federal
SPF Intérieur	Federal
SPF Budget et Controle de la Gestion	Federal
Institut des vétérans- Institut national des invalides de guerre, anciens combattants et victimes de guerre	Federal
NGI	Federal

3. Kruispuntbank van Ondernemingen / Banque-Carrefour des Entreprises

Offered

Organisation	Level
SPF Economie, P.M.E., Classes moyennes et Energie	Federal

Used

Organisation	Level
SPF Justice	Federal
SPF Affaires étrangères, commerce extérieur et Coopération au Développement	Federal
FOD Mobiliteit	Federal
Hulpkas voor Ziekte- en Invaliditeitsverzekering	Federal
FOD Financiën	Federal
ONSS - RSZ	Federal
INAMI-RIZIV	Federal
AFMPS / FAGG	Federal
FEDRIS (FAT+FMP)	Federal
Fonds des accidents de travail - Fonds voor Arbeidsongevallen	Federal
CIRB	Region (BXL)
CIRB	Region (BXL)
Région Bruxelles (Direction achats et logistique)	Region (BXL)
LNE	Region (VL)
LV	Region (VL)

ILVO	Region (VL)
VLAIO	Region (VL)
KB	Region (VL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
DGO Aménagement du territoire, du logement, du patrimoine et de l'énergie	Region (WAL)
Agence du numérique	Region (WAL)
DGO de l'agriculture, des ressources naturelles et de l'environnement	Region (WAL)
Secretariat Général - Département de la Géomatique	Region (WAL)
DGO de la fiscalité	Region (WAL)
Luxembourg (Service IT)	Province
Limburg	Province
Antwerpen	Province
Vlaams-Brabant	Province
Saint-Gilles	Local level
Brugge	Local level
Liège	Local level
iMio	Local Level (Intercommunale)
Coudere	Private sector
E&Y	Private sector
Allianz Belgium	Private sector

4. CSAM

Offered

Organisation	Level
ONSS – RSZ	Federal
SPF Finances	Federal
FEDICT	Federal
BCSS	Federal
SPR Economie	Federal
SPF Intérieur	Federal

Used

Organisation	Level
SPF Intérieur	Federal
ONSS - RSZ	Federal
INAMI-RIZIV	Federal
ONVA-RJV	Federal
CIRB	Region (BXL)
Informatie Vlaanderen	Region (VL)
Liège	Local level
Three unknown commune	Local level

5. Federal Authentication Service

Offered

Organisation	Level

FEDICT	Federal

Used

Organisation	Level
SPF Intérieur	Federal
Defence	Federal
CIRB	Region (BXL)
FB	Region (VL)
Beveren	Local level
iMio	Local Level (Intercommunale)

6. Registre national / Rijksregister

Offered

Organisation	Level
SPF Intérieur	Federal
Fonds des maladies professionnelles	Federal

Used

Organisation	Level
SPF Intérieur	Federal
SPF Affaires étrangères, commerce extérieur et Coopération au Développement	Federal
Defence	Federal
FOD Mobiliteit	Federal
Hulpkas voor Ziekte- en Invaliditeitsverzekering	Federal
FOD Financiën	Federal
ONSS - RSZ	Federal
AFMPS / FAGG	Federal
ONEM-RVA	Federal
Institut des vétérans- Institut national des invalides de guerre, anciens combattants et victimes de guerre	Federal
FEDRIS (FAT+FMP)	Federal
CIRB	Region (BXL)
CIRB	Region (BXL)
Région Bruxelles (inspection du logement)	Region (BXL)
RWO	Region (VL)
KB	Region (VL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
DGO Aménagement du territoire, du logement, du patrimoine et de l'énergie	Region (WAL)
DGO de l'agriculture, des ressources naturelles et de l'environnement	Region (WAL)
Secretariat Général - Département de la Géomatique	Region (WAL)
Limburg	Province
Hainaut	Province
Luxembourg (Service IT)	Province
Brucity	Local level
Saint-Gilles	Local level

Brugge	Local level
Hasselt	Local level
Liège	Local level
Five unknown communes	Local level
Landmeters	Private sector

7. Portaal Sociale Zekerheid / Portail de la Sécurité Social

Offered

Organisation	Level
BCSS / KSZ	Federal
Informatie Vlaanderen (via MAGDA)	Region (VL)

Used

Organisation	Level
ONEM-RVA	Federal
Fonds des accidents de travail - Fonds voor Arbeidsongevallen	Federal
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
Antwerpen	Province
Unknown commune	Local level

8. Kruispuntbank Sociale Zekerheid / Banque-Carrefour de la Sécurité Social

Offered

Organisation	Level
RSVZ-INASTI	Federal
Fonds des maladies professionnelles	Federal

Used

Organisation	Level
Fonds des maladies professionnelles	Federal
BCSS / KSZ	Federal
SPF Finances	Federal
Rijksinstituut voor Ziekte- en Invaliditeitsverzekering (RIZIV)	Federal
ONEM-RVA	Federal
RSVZ-INASTI	Federal
Informatie Vlaanderen	Region (VL)
RWO	Region (VL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
Secretariat Général - Département de la Géomatique	Region (WAL)
DGO de la fiscalité	Region (WAL)
DGO de l'agriculture, des ressources naturelles et de l'environnement	Region (WAL)
CIRB	Region (BXL)
Liège	Local level
Two unknown communes	Local level

9. ESS/MSS Persopoint

Offered

Organisation	Level
FOD Personeel & Organisatie	Federal

Used

Organisation	Level
SPF Budget et Controle de la Gestion	Federal
FOD Personeel & Organisatie	Federal
Institut des vétérans- Institut national des invalides de guerre, anciens combattants et victimes de guerre	Federal
NGI	Federal

10. FEDCOM

Offered

Organisation	Level
SPF Budget et Controle de la Gestion	Federal

Used

Organisation	Level
SPF Budget et Controle de la Gestion	Federal
Defence	Federal
FOD Mobiliteit	Federal
FOD Financiën	Federal

11. eID

Offered

Organisation	Level
FEDICT	Federal

Used

Organisation	Level
SPF Personnel et Organisation - Selor	Federal
Ministry of Defence	Federal
State Archives of Belgium	Federal
Hulpkas voor Ziekte- en Invaliditeitsverzekering	Federal
FOD Financiën	Federal
FEDICT	Federal
DGO des pouvoirs locaux et de l'action sociale	Region (WAL)
RWO	Region (VL)
VLAIO	Region (VL)
Antwerpen	Province
Ville de Seneffe	Local level

12. Kadaster / Cadastre

Offered

Organisation	Level
Informatie Vlaanderen (via MAGDA & Geopunt)	Region (VL)

Used

Organisation	Level
Defence	Federal
Infrabel	Federal
Federal Police	Federal
CIRB	Region (BXL)
Région Bruxelles (inspection du logement)	Region (BXL)
RWO	Region (VL)
Informatie Vlaanderen	Region (VL)
LNE	Region (VL)
DGO Aménagement du territoire, du logement, du patrimoine et de l'énergie	Region (WAL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
Vlaams-Brabant	Province
Antwerpen	Province
Brucity	Local level
Hasselt	Local level
Unknown commune	Local level
SIGGIS	Private sector
Landmeters	Private sector
BAJ Architects	Private sector
Notary	Private sector

13. CadGIS

Offered

Organisation	Level
FOD Financiën	Federal

Used

Organisation	Level
FOD Financiën	Federal
Secretariat Général - Département de la Géomatique	Region (WAL)
Two unknown communes	Local level
BEGX	Private sector

14. WebDIV

Offered

Organisation	Level
FOD Mobiliteit	Federal

Used

Organisation	Level
CIRB	Region (BXL)
DGO des routes et des bâtiments	Region (WAL)
DGO de l'agriculture, des ressources naturelles et de l'environnement	Region (WAL)
DGO de la fiscalité	Region (WAL)

15. eBox

Offered

Organisation	Level
Office national de l'emploi – RVA (Afleveren van attesten)	Federal
ONSS - RSZ	Federal
BCSS / KSZ	Federal

Used

Organisation	Level
Office national de l'emploi – RVA (Afleveren van attesten)	Federal
ONSS - RSZ	Federal
Fonds des maladies professionnelles	Federal
FEDRIS (FAT+FMP)	Federal
Fonds des accidents de travail - Fonds voor Arbeidsongevallen	Federal
ONVA-RJV	Federal
Unknown commune	Local level

16. URBAIN

Offered

Organisation	Level
FOD Financiën	Federal

Used

Organisation	Level
FOD Financiën	Federal
Four unknown communes	Local level
iMio	Local level (intercommunale)

17. My Minfin

Offered

Organisation	Level
FOD Financiën	Federal

Used

Organisation	Level
FOD Financiën	Federal
Bibliothèque royale de Belgique / KRB	Federal
Two unknown communes	Local level
BEGX	Private sector
Landmeters	Private sector

18. Belcotax-on-web

Offered

Organisation	Level
FOD Financiën	Federal

Used

Organisation	Level
ONEM-RVA	Federal
Institut des vétérans- Institut national des invalides de guerre, anciens combattants et victimes de guerre	Federal
One unknown commune	Local level
Allianz Belgium	Private sector

19. Dimona

Offered

Organisation	Level
ONSS - RSZ	Federal

Used

Organisation	Level
Bibliothèque royale de Belgique / KRB	Federal
RWO	Region (VL)
Unknown commune	Local level
Agoria	Private sector
Allianz Belgium	Private sector

20. Portail cartographique Région Wallonne (GeoPortail - PICC)

Offered

Organisation	Level
DGO des routes et des bâtiments	Region (WAL)
DGO de l'agriculture, des ressources naturelles et de l'environnement	Region (WAL)
DGO des routes et des bâtiments	Region (WAL)
Hainaut	Province
Luxembourg	Province
Luxembourg (Service IT)	Province

Used

Organisation	Level
Federal Police	Federal
DGO Aménagement du territoire, du logement, du patrimoine et de l'énergie	Region (WAL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
Secretariat Général - Département de la Géomatique	Region (WAL)
Luxembourg (Service IT)	Province
Unknown commune	Local level
BEGX	Private sector

21. GeoPunt (CRAB)

Offered

Organisation	Level
Informatie Vlaanderen	Region (VL)
MOW	Region (VL)
West-Vlaanderen	Province
Two unknown communes	Local level

Used

Organisation	Level
Federal Police	Federal
Two unknown communes	Local level
Landmeters	Private sector

22. Digiflow

Offered

Organisation	Level
FEDICT	Federal

Used

Organisation	Level
LNE	Region (VL)
DGO de l'économie, de l'emploi et de la recherche	Region (WAL)
DGO des routes et des bâtiments	Region (WAL)
DGO Mobilité et voies hydrauliques	Region (WAL)
Luxembourg	Province
Hainaut (Direction Générale Systemes d'information)	Province
Vlaams-Brabant	Province
Antwerpen	Province
Saint-Gilles	Local level
Rochefort	Local level

23. Telemarc

Offered

Organisation	Level
Agence pour la Simplification Administrative	Federal

Used

Organisation	Level
Région Bruxelles (Direction achats et logistique)	Region (BXL)
DGO des pouvoirs locaux et de l'action sociale	Region (WAL)
E&Y	Private sector

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